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A subject issue devoted principally to "Agricultural Statistics Methods and Materials"

Un número especial dedicado principalmente a "Estadísticas Agropecuarias Métodos y Materiales"

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2. The owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual member, must be given.) Inter American Statistical Institute, Pan American Union, Washington 6, D.C.

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Francisco de Abrisqueta, Secretary General, Inter American Statistical Institute
Sworn to and subscribed before me this 19th day of September 1952.
Lowell Curtiss, Notary Public
(My commission expires April 1, 1956.)

Note: The Inter American Statistical Institute was designated as an international organization by U. S. Executive Order 9751, dated July 11, 1946, entitled to the privileges, exemptions, and immunities of Public Law 291, approved December 29, 1945.

FOREWORD

Estadística No. 38 is devoted principally to "AGRICULTURAL STATISTICS METHODS AND MATERIALS." It is the second experimental number in a trial series of "subject issues" of the IASI Journal. (See the background note on subject issues in *Estadística* No. 35, p. 284; and No. 36, which was devoted to "Statistical Teaching and Training Methods and Materials.")

The present number, like its predecessor, was developed primarily to provide a collection of useful viewpoints and important reference materials which would be of particular value to teaching and training activities in the Western Hemisphere—whether conducted in international training centers, government statistical operating agencies, universities, or elsewhere. In the present instance the field is agricultural statistics. With respect to scope and coverage, issue No. 38 aims to provide orientation on agricultural statistics as a coordinated whole, with predominant emphasis on the *system of current agricultural statistics.* Although the *census* of agriculture is the primary subject of several papers, and is treated secondarily through many of the other papers, the emphasis in general is on its value and relationship to a system of current statistics, rather than on the periodic census as such.

Contents of this subject issue fall roughly into six categories: (1) Objectives and scope of a system of agricultural statistics, and uses of the data; (2) establishing a system of agricultural statistics elements and steps (including coordination); (3) methods and techniques of particular importance in the field of agricultural statistics; (4) problems of international comparability in agricultural statistics; (5) international activities relating to agricultural statistics (recommendations and standards, training and

PREFACIO

Estadística No. 38 está dedicada principalmente a: "ESTADISTICAS AGROPECUARIAS — METODOS Y MATERIALES." Esta es la segunda entrega de carácter experimental en una serie de ensayos sobre "entregas especiales" de la Revista del IASI. (Véase las notas explicativas relacionadas con "entregas especiales" en *Estadística* No. 35, p. 284; y No. 36, que estuvo dedicada al tópico de "Métodos y Materiales de Enseñanza y Entrenamiento Estadísticos.")

La presente entrega, como la anterior, fué principalmente preparada con el fin de proporcionar una colección de materiales y puntos de vista útiles e importantes que fuesen de valor especial en las actividades de enseñanza y entrenamiento en el Hemisferio Occidental, bien que éstas se lleven a cabo en centros internacionales de entrenamiento, organismos estadísticos gubernamentales, universidades, o en cualquier otro lugar. En el caso presente, el campo cubierto es estadística agropecuaria. Con respecto a su alcance y contenido, la entrega No. 38 tiene como objetivo proporcionar una orientación amplia sobre la estadística agropecuaria como un conjunto coordinado, destacando de manera predominante el *sistema de estadísticas agropecuarias continuas.* Aun cuando los *censos* agropecuarios son el tema principal de varios artículos, y se los trata en forma secundaria en muchos de los restantes, el énfasis general sobre ellos se ha concentrado en su valor para, y sus relaciones con, un sistema de estadísticas agropecuarias continuas, en lugar de en los censos periódicos como tales.

El contenido de este número especial puede clasificarse, en términos generales, en seis categorías: (1) Objetivos y alcance de un sistema de estadísticas agropecuarias, y utilización de los datos; (2) establecimiento de un sistema de estadísticas agropecuarias—elementos y etapas (incluyendo coordinación); (3) métodos y técnicas de importancia especial en el ramo de las estadísticas agropecuarias; (4) problemas de comparabilidad internacional de las estadísticas agropecuarias; (5) actividades internacionales referentes a las estadísticas agropecuarias (recomendaciones y estándares, entrenamiento y

consulting, committee and conference activities, etc.); (6) bibliography of selected references relating to methods in agricultural statistics. The regular section on Statistical News is continued, in somewhat expanded form.

Unlike No. 36, for which the majority of the articles were specially solicited, No. 38 is composed predominantly of selections from material prepared, compiled, or translated in the first instance for the II Session of the Committee on Improvement of National Statistics (COINS), held in Ottawa, September 29 — October 10, 1952. A major part of the program of that Session was concerned with agricultural statistics and, while a report of the actions of that Session have been published (see supplement 2 of *Estadística* No. 37 for December 1952), it was felt that the publication of various of the papers as a related "collection" would operate to supplement and extend considerably the benefits of the conference itself. These circumstances explain why some of the papers—particulary those which served originally as conference *working documents*—still bear more resemblance to conference documents in structure and format, than to articles, in spite of the fact that some adaptation has been made (particularly in the opening and closing sections), and some editorial corrections introduced.

The material of No. 38 is published under two separate covers—the main *Journal,* consisting of 200 pages, in which articles appear in English text; and a *Supplement* consisting of 199 pages of Spanish text (in some cases, articles prepared originally in a Spanish text, in other cases, translations from the English). An English text is not nocessarily provided for *all* of the articles published in Spanish, and *vice versa.* If, however, a text in the other language has appeared or is available elsewhere, that fact and the source are indicated by footnote.

A complete or "over-all" table of contents for the two parts of No. 38 is given in the main Journal; from this it is possible to ascertain quickly the languages in which a particular item is consulta; actividades de comisiones y conferencias, etc.); (6) bibliografía de referencias escogidas relacionadas con los métodos de estadística agropecuaria. Además, en este número se ha continuado en forma un tanto ampliada la sección regular de Noticias Estadísticas.

En oposición a lo ocurrido con el No. 36, para el cual los artículos fueron especialmente solicitados, el No. 38 está integrado principalmente por una selección de materiales preparados, compilados o traducidos en primera instancia para la II Sesión de la Comisión de Mejoramiento de las Estadísticas Nacionales (COINS), celebrada en Ottawa, Canadá, del 29 de septiembre al 10 de octubre de 1952. La mayor parte del programa de esa Sesión estuvo relacionado con estadísticas agropecuarias, y, aún cuando un informe de las recomendaciones de ella ha sido ya publicado (véase el suplemento 2 de *Estadística* No. 37, diciembre 1952), se estimó que la publicación de una colección de varios de los documentos presentados contribuiría a complementar y extender los beneficios de la conferencia. Estas circunstancias explican la razón por la cual algunos de los artículos—especialmente aquéllos que originalmente fueron utilizados como documentos de trabajo—aún tienen más semejanza con documentos presentados a conferencias, en cuanto a estructura y formato, que con artículos, a pesar del hecho que se introdujeron algunas adaptaciones (particularmente en las secciones de introducción y final) y se hicieron algunas correcciones de tipo editorial.

En material del No. 38 se presenta en dos partes separadas—la *Revista* misma, que consta de 200 páginas y en la que aparecen los artículos en idioma inglés, y un *Suplemento,* que abarca 199 páginas en idioma español (en algunos casos, artículos preparados originalmente en español, y, en otros, traducciones del inglés). No se proporciona el texto inglés para todos lo artículos que aparecen en español, y viceversa. Sin embargo, si se ha publicado o existe disponible su texto en otro idioma, en otro lugar, se indica este hecho y su fuente por medio de una nota al pie del articulo.

En la Revista principal se da un índice completo o "global" del contenido de las dos partes que constituyen el No. 38. Con base en este índice es posible determinar rápidamente el idioma en que

available, and its placement. In addition to the over-all table of contents in the main Journal, the supplement contains its own list of contents, on the cover.

Respecting *language practice,* the policy of placement of text by language in No. 38 differs from that followed in No. 36, in that the English text of articles is all presented in the main Journal and the Spanish text in the supplement. (In No. 36, articles were in general presented in their original or definitive text—whether English or Spanish—in the main Journal, and in their translated form in the supplement). This experimental change in No. 38 to "packages" of all-English and all-Spanish text, respectively, was made in response to requests that this method be tried out, and because the contents of No. 38 lent themselves well to this basis.

In relation to the subject field treated in the present issue, attention is called to a related study now under way by the IASI Secretariat which is expected to appear in the first half of 1953, either as a *subject supplement* to the June 1953 issue of *Estadística,* or in other published form, under the title "Anotaciones sobre los Sistemas de Estadísticas Agropecuarias en los Países Americanos" (title is provisional). This study, which is planned to be published in a Spanish text only, will be concerned with the systems of *current* agricultural statistics in the countries (agricultural censuses, for example, will not be treated), and will be in the nature of an orientation on scope and coverage of the statistics, agencies responsible, procedures and sources of information, frequency of publication of the data, etc. It will include in some cases entire papers or segments contributed by technicians in the respective countries, over their authorship (as, for example, the paper "Estadísticas Agrícolas en Puerto Rico"), and in other cases summary descriptions compiled by the IASI Secretariat from more exhaustive material supplied by the General Bureaus of Statistics of the countries.

aparece un tema específico, y su localización. Además del índice general de contenido en la Revista principal, el suplemento tiene en la cubierta su propio índice.

En relación con la *práctica sobre idiomas,* la política de distribución del texto por idiomas en el No. 38 difiere de la seguida en el No. 36, por cuanto el texto inglés de los artículos es presentado en su totalidad en la Revista principal y el texto español en el suplemento. (En el No. 36 los artículos fueron presentados en general en su texto original o definitivo—bien se tratara de inglés o español—en la Revista principal, y sus correspondientes traducciones en el suplemento). Este cambio experimental en el No. 38, de distribuir el material en "conjuntos" de inglés y español respectivamente, fué hecho como respuesta a solicitudes de que este método fuese ensayado, y porque los artículos del No. 38 se prestan bien a esta clase de distribución.

Con respecto al tema tratado en este número especial, se desea llamar la atención sobre un estudio afin actualmente en preparación por la Secretaría de IASI y que se espera será publicado en el primer semestre de 1953, bien como un suplemento especial a la entrega de junio de 1953 de *Estadística,* o en alguna otra forma, bajo el título de "Anotaciones sobre los Sistemas de Estadísticas Agropecuarias en los Países Americanos" (título provisional). Este estudio, cuya publicación se planea solamente en texto español, tratará de los sistemas de estadísticas agropecuarias *continuas* de los países (los censos agropecuarios, por ejemplo, no serán considerados), y su naturaleza será de orientación sobre el alcance y cobertura de las estadísticas, los organismos responsables de ellas, los procedimientos de obtención de información y sus fuentes, la frecuencia de publicación de los datos, etc. En algunos casos incluirá contribuciones enteras, o segmentos de éstas, suministradas por técnicos de los respectivos países, indicándose su autor en cada caso (por ejemplo, el artículo "Estadísticas Agrícolas en Puerto Rico"), y en otros casos, descripciones sumarias preparadas por la Secretaría de IASI con base en material más exhaustivo proporcionado por las Direcciones Generales de Estadística de los países.

Acknowledgment: The present issue has been prepared with the especial consultation, collaboration, and assistance of *Antonio J. Posada*, technician-consultant in agricultural statistics on the staff of the IASI Secretariat. Many of the papers presented in the issue reflect, also, a considerable amount of consultation and collaboration on the part of technicians in the following agencies, during the stages of their original planning and preparation as a part of the program of the II Session of COINS: U.S. Department of Agriculture (particularly Emerson M. Brooks and Walter A. Hendricks, of the Bureau of Agricultural Economics, and Joseph A. Becker, of the Office of Foreign Agricultural Relations); the Markets and Economic Service of the Department of Fisheries of Canada (particularly John B. Rutherford); General Bureaus of Statistics of the respective American nations; and the Food and Agricultural Organization of United Nations.

The Editor

Washington, D. C.
December 31, 1952

Reconocimiento: La presente entrega ha sido preparada con la consulta, colaboración y asistencia especiales de *Antonio J. Posada*, consultor técnico en estadísticas agropecuarias de la Secretaría de IASI. Muchos de los artículos incluidos en esta entrega reflejan también una apreciable participación de consulta y colaboración de parte de técnicos de los siguientes organismos, durante las etapas originales de planeamiento y preparación de los artículos como parte del programa de la II Sesión de COINS: Departmento de Agricultura de los Estados Unidos (particularmente Emerson M. Brooks y Walter A. Hendricks, de la Dirección de Economía Agrícola, y Joseph A. Becker de la Oficina de Relaciones Agrícolas Exteriores); el Servicio de Economía y Mercados del Departamento de Pesca del Canadá (particularmente John B. Rutherford); las Direcciones Generales de Estadística de los respectivos países americanos; y la Organización de las Naciones Unidas para la Agricultura y la Alimentación.

La Directora

Washington, D. C.
Diciembre 31, 1952

OBJECTIVES AND SCOPE OF AN AGRICULTURAL STATISTICS SYSTEM*

(Editorial note: *This is the text—with editorial corrections, substitution of the present note in lieu of the original introductory section, and some adaptation of the first paragraph of the closing section—of a working document of the II Session of the Committee on Improvement of National Statistics, recently held in Ottawa. As explained in the original document, it does not purport to be a new or original contribution to this field, but rather represents a composite summary of ideas, viewpoints, and suggestions expressed previously by various authorities on the importance and value of adequate national crop and livestock statistics. The content of the document was based principally on the sources listed as "references" at the end of the article.*

The stated purpose of the working document was "to serve as a basis for discussion and analysis as a result of which (members of) COINS can take action leading to the development of national programs of improvement in agricultural statistics services." Accordingly, the statements contained in it reflect the viewpoints of an international organization in its efforts to aid the expansion and improvement of national statistics to the mutual benefit of the governments and the peoples of the Western Hemisphere.

It was believed that this document would furnish a more adequate orientation or introduction to the present subject issue of the Journal than could be obtained from an article solicited from and prepared by an individual author.)

Contents

Why are agricultural statistics needed?
What subjects should be covered by an agricultural statistical service?
When should agricultural statistical information be prepared?
How often should statistical reports be made?
What types of action might be profitably considered?
Appendix: Resolution 23 of the II Inter-American Statistical Congress.

Why Are Agricultural Statistics Needed?

The needs for agricultural statistics are multiple, and can be grouped according to the needs of various types of users: Agricultural producers, dealers in farm products, government agencies, consumers of farm products, and international organizations.

Needs of agricultural producers

Agricultural producers need agricultural statistics as a guide in planning the kinds and quantities of commodities to produce. A farmer who grows products for sale and who incurs heavy expense in producing

* Prepared by the Office of Foreign Agricultural Relations of the United States Department of Agriculture in collaboration with the Inter American Statistical Institute, for use as a working document of the II Session of the Committee on Improvement of National Statistics, held in Ottawa, Canada, September 29 – October 10, 1952 (IASI doc. 1204a).

them, cannot afford to produce without consideration of the plans of other farmers and without knowledge of the competition he must face when he brings his produce to market. He needs to know what the supplies of his produce were in past seasons in order to judge the effect of these supplies upon the prices which he will receive. If prices were high, he needs to take account of the fact that supplies were short. Contrariwise, if prices were low, it may indicate that production was large. He must base his plans on his appraisal of what prices are likely to be when he takes his produce to market.

Once the farmer has harvested his product, he must decide when and where to sell it. When it is ready for the market he needs information about the supplies which will go to the market in which he ordinarily sells his products. To the extent that the facts concerning the quantities available in adjoining areas are known, he is able to decide where he should take his produce; to the extent that the total quantity in his area of competition is known, he can plan his marketing in advance for the entire season. For example, he can withhold from the market during the early season rush if he has confidence that the supplies available are such as to give promise of a favorable price later in the season.

Decisions which the individual farmer needs to make concerning the kinds and quantities of commodities to produce and the time and place to sell them, need also to be made by the managers of producers' organizations and cooperatives selling agricultural products. Because of the larger quantities involved, the usefulness of adequate agricultural statistics is enhanced. In planning production programs, the usefulness of adequate agricultural statistics to cooperatives buying farmers' supplies is likewise increased.

Needs of dealers in farm products

Dealers in farm products need agricultural statistics as a guide in planning purchases. Their interests are not per se in conflict with those of producers. It is a matter of common knowledge that when the facts of supplies are known, price fluctuations are minimized. Adequate agricultural statistics help to bring about equilibrium of price quickly and at a level which is to the mutual advantage of seller and buyer. Since dealers in farm products frequently sell seed, fertilizers, machinery and other supplies to producers and in many instances advance credit for such purchases, they can use reliable agricultural statistical information to guide them in the procurement of supplies and in setting the terms of credit to producers. If they are informed of the facts of current supplies and problable future supplies, the risks in doing business are lessened and smaller profit margins are required to take care of over-purchases, failure to collect, and credit extensions.

When government corporations and similar quasi-official bodies engage in procuring supplies and acquiring agricultural produce for sale, the use of reliable agricultural statistics in connection with these activities

is of tremendous importance in minimizing the cost of operation. The government agency which is responsible for such activities is not in a position to guess about the extent of supplies and the probable future supplies; it cannot carry on efficient operations in the absence of adequate factual information.

Needs of government agencies

Government agencies need agricultural statistics as a guide in framing regulations and legislation in connection with their responsibilities to the producers and to the people at large. An example of such matters are tariff rates. Rates which will maintain domestic production at an optimum level and at the same time safeguard the interests of consumers must be set in the light of the records of production, consumption and prices. Import and export quotas which may be justified by emergency deficits or surpluses can hardly be established without knowledge of the facts of supplies. Price support programs intended to stabilize returns to producers without injustice to consumers must be set in the light of the record of the past and an analysis of probable future developments.

Governments, like producers and dealers, cannot afford to guess about future supply-demand relationships. The government authorities responsible for setting up and administering credit facilities for agricultural improvement and for new public works must have facts concerning agricultural production in their own countries and in other countries, as a guide to action. A new reclamation project with all the attendant facilities generally involves huge investments which cannot be justified without reasonable assurances as to underlying need, and such assurances can be obtained only from a study of national and international statistics. The construction of the grain elevator or flour mill, oil refinery and meat packing establishment under government auspices needs to be undertaken with the same attention to sources of raw materials and markets for finished products as would be shown with a similar investment of private capital.

Needs of consumers of farm products

Consumers need agricultural statistics as a guide in buying food, fiber, and other agricultural products. The postwar period is replete with instances of consumers' excessive purchases because of misinformation as to supplies, amounting in some cases to near panic. Disappearance from the market of certain products like sugar, flour, and meat occurred chiefly because normal distribution systems were unable to bring the products to the retail outlets with sufficient rapidity. Such occurrences can be largely eliminated if the facts of supply are known. If a shortage of a food item actually exists as shown by dependable statistics of production and marketing, an equitable distribution through public or private rationing may be set in motion in order that a fair distribution to consumers may result. Rumors as to threatened shortages

and surpluses feed upon ignorance of the facts. When adequate statistical information as to the true situation is available, excessive purchasing and hoarding, and artificial shortages and price increases are less likely to occur.

Needs of international organizations

International organizations need agricultural statistics in order to appraise agricultural developments in various parts of the region or of the world and bring to the attention of member governments trends of agricultural production and food and fiber supplies. These organizations need to review for the benefit of their members the current state of agriculture and probable future developments, and to point out the areas in which danger signs are appearing. Such appraisals, however, can be made only when the basic statistical data are of sufficient precision to justify confidence in the analysis.

Member governments of international organizations such as the Food and Agriculture Organization of the United Nations (FAO) have repeatedly agreed in conferences on the need for setting up production programs. The need for such programs both for short-time and long-time adjustments has been recognized, and the international organizations have been called upon for facts of sufficient reliability to serve as a basis for such planning.

WHAT SUBJECTS SHOULD BE COVERED BY AN AGRICULTURAL STATISTICAL SERVICE?

The extent of service which can be rendered to agricultural producers, government officials, consumers of agricultural commodities, and other users of agricultural data, varies greatly from country to country for many reasons. Among these are the number and value of commodities of commercial importance in the country, the stage of development of the agricultural statistical service, and the funds available for carrying on the work. A program of agricultural statistics needs to be adapted to the informational requirements of the public. It needs to grow; it needs to demonstrate its value. It needs to begin with inquiries and answers on fundamental, simple subjects and develop inquiries and answers on successively more difficult subject matter. An agricultural statistical service becomes useful and successful only to the extent that improved methods are developed and reliable information published. Such a service brings about a general appreciation of the value of statistical information and develops the confidence of the public.

The subject matter of statistical inquiries in the agricultural field has been discussed at previous meetings under the auspices of word-wide international and regional organization. The FAO and the Inter American Statistical Institute have developed lists of topics suitable for censuses and for current reporting services. At successive international conferences it may be desirable to review previous lists in the light of the experience

of the participants in their separate countries as to new needs which have developed and changes in emphasis which are required by new developments. For example, the illustrative lists of livestock omit reference to work stock—horses, mules, oxen, etc.—which are important sources of power in most of the Western Hemisphere, and to sheep, which are an important source of agricultural income. In like manner it may be that the members of this Committee may now wish to attach greater importance to calculations of consumption of agricultural products in their countries.

For the purpose of this review, the lists agreed upon at the II Inter-American Statistical Congress held in Bogotá are included as an appendix to the present document. In connection with these lists, officials in charge of the agricultural statistical services need to consider the stage of development in their countries and prepare a program according to available facilities. Thus, in the case of crop area and production, first importance might well be given to a few principal crops of commercial importance, with other crops of lesser importance incorporated into the program as means become available. It may be that certain items in the first group (minimum list) should be transferred to the second group (expanded list) or vice versa. In any event, it is desirable that a new primary list be chosen. The Committee members may wish to suggest modifications of the Bogotá lists which they consider can be most adequately undertaken with the facilities available at present in the countries of the Americas. It would be desirable for the lists selected to permit some flexibility and provide for expansion as opportunities permit.

WHEN SHOULD AGRICULTURAL STATISTICAL INFORMATION BE PREPARED?

Reports of agricultural developments, as in the case of all statistical reports, are most effective, most useful, and most gratefully received by the public when they are timely. Perhaps the presentation of suggestions on how best to achieve optimum usefulness of the statistics from the standpoint of the producer, handler, and consumer of agricultural commodities would be helpful taking into account the suggested uses of agricultural statistics previously set forth. A program of agricultural statistical reports needs to be framed in such a manner as to lead to these objectives.

The program should be designed to fit the needs of the public

Certain broad relationships might be set down at this session as a general goal for the guidance of national agricultural statistical services. These will be outlined in the following paragraphs.

Historical series of optimum coverage and precision. Historical series provide basic and historical data against which the significance of current developments may be appraised. Such series usually need to be revised

in the light of successive surveys and of collateral information. For example, estimates of crop production may be revised after full information has been assembled on the marketing and utilization of the commodity. The validation of these historical figures merits continuous effort, looking to the inclusion of as many commodities as are feasible and looking to improving their precision. Historical data of this kind in many cases need to be developed through the medium of censuses and comprehensive surveys.

Current series to meet current needs. Against the background of historical information, a program of statistical releases follows logically in line with needs such as those outlined in this paper. At the time when agricultural producers are making their decisions with respect to planting, to buying seed and supplies, or to marketing, information should be available to help them. Such a program requiries a close study of planting and harvesting dates and an adequate, early preparation of a program of inquiries, giving due consideration to the delays in communications and to the size of the office staff for the tabulation and summarization of the returns. It calls for a minimum lapse of time between the date of inquiry and the date of release of the information.

Forecasts for advanced planning. An ultimate objective in timeliness of information is the establishment of a series of forecasts of production and of farmers' intentions to plant crops and to breed livestock. Such a program would provide maximum service to users of the data. In order to provide for the timely collection of such data and their prompt publication, careful planning is required. It is essential that the subject of inquiry be a matter of definite knowledge on the part of the producer at the time he is asked to report and that the results be released in time to be of assistance when decisions are being made.

The program should be designed to fit available facilities

The program of agricultural statistical reports must be adapted to the funds and personnel available and to requests received from government officials, farm groups, and the public. Officials in charge of agricultural statistics need to have these considerations in mind when selecting from among the many possibilities of subject matter to be encompassed by the service.

Adapting the program to available funds. Among the factors affecting the success and usefulness of any government service is the exercise of good judgment in adapting the program to the funds and personnel available. An over-ambitious program can lead to an unsatisfactory product, with the subjects of inquiry inadequately covered, the results of questionable value, and publication either late or not justified at all. These considerations point up the need of not attempting more than can be done in a technically acceptable manner with the available

resources and facilities. It is better to start with a limited program and develop it as opportunity permits.

Adapting the program to the requests received. An agricultural statistical service should be a practical one designed to supply information which will serve the public and be useful to those seeking information on agricultural developments. In initiating such a service, early consideration needs to be given to the kind of requests which have led to its establishment. There should be consultation with government officials, farm groups and the public in order that the information may answer definite needs. Major changes in program, in scope, or timeliness also need to be made in the light of expressed requirements of legitimate users.

HOW OFTEN SHOULD STATISTICAL REPORTS BE MADE?

The scheduling of agricultural statistical reports should be designed to reflect probable changes which ordinarily occur during the production cycle. Past experience usually points the way to the frequency needed. In developing a program, a study needs to be made of the weather and other factors which influence the final output of agricultural products.

Weather and the growing period

More frequent information to serve the full needs of the public is required on crops which are more highly variable in output because of frequent changes in rainfall, temperature, and other climatic factors, than on crops grown in areas or under conditions where such changes are less drastic and less frequent. In countries with sparse rainfall, dryland crops are normally more frequently reported than irrigated crops. Again, crop production under climatic conditions which permit repeated plantings or plantings which can be made over considerable periods of time, calls for more frequent reports on acreage than in short-seasoned climates where only one product can be taken from a given area of land in a 12-month period. In like manner less frequent reports are usually required on crops with a long growing season, than on short-seasoned crops.

Seasonality in livestock production

Reports on livestock production should take into account the frequency with which changes occur in the production pattern. Fewer reports are required on beef cattle than on hogs, because of the longer life cycle of the former. Wool is generally an annual product taken in the spring, while milk and eggs are produced daily. It is sufficient to report meat production, in general, less frequently than milk or egg production, which change rapidly, depending upon changes in pasture and feed conditions. These differences need to be recognized in setting

up a program of agricultural reports. The officials of the national agricultural reporting services need to formulate programs in which the frequency of reports has been developed in the light of demands for the information by the public.

WHAT TYPES OF ACTION MIGHT BE PROFITABLY CONSIDERED?

The following types of action might be profitably considered under this topic: The feasibility of agreeing on certain basic principles regarding the objectives and scope of national programs of agricultural statistics; and recommendation that the governments through their national statistical agencies formulate new or improved agricultural statistics programs in accordance with these principles.

This statement of principles and promotion of programs might include consideration of the following elements which have been emphasized in the present document:

1. That agricultural statistics are needed by:
   a. Agricultural producers, as a guide in planning their production and marketing programs.
   b. Dealers in farm products, in serving the agricultural industry more efficiently.
   c. Government agencies, as a guide in framing policies, regulations, and legislation designed to improve agricultural conditions.
   d. Consumers of food and other agricultural products, as a guide in making their purchases.
   e. International organizations, in appraising agricultural developments in the various zones of a geographic region.

2. That the programs be based on a minimum list of topics and on a more extensive, optional list.

3. That the programs be designed in such a way that the information obtained through them (a) satisfies the needs of producers, distributors, and consumers in arriving at decisions regarding planting, harvesting, and marketing; and (b) reflects the changes which occur in the agricultural production cycles.

4. That the programs be adapted to (a) the funds and personnel available, making sufficient allowance for future expansion; and (b) the needs of producers and consumers as to scope and timeliness of surveys.

APPENDIX *

RESOLUTION 23 OF THE II INTER-AMERICAN STATISTICAL CONGRESS, BOGOTA, JANUARY 16-27, 1950

23. AGRICULTURAL STATISTICS (INCLUDING MINIMUM LIST OF TOPICS)

The Second Inter-American Statistical Congress, assembled in Bogotá, January 16-27, 1950,

* This appendix is given only with the English text of this article. The corresponding Spanish text of resolution 23 appears in the paper "Recomendaciones Internacionales Escogidas Referentes al Mejoramiento de las Estadísticas Agropecuarias," published elsewhere in this issue of the Journal.

CONSIDERING THAT:

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RECOMMENDS:

A. That the American countries adopt the following preliminary minimum list of topics for their current agricultural series:

1. Principal crops: Areas sown and harvested, and production.

2. (a) Livestock, cattle and hogs; number, purpose for which kept, females of reproductive age. For all other classes of livestock it is recommended to show only the number of head. (b) Production of principal livestock products.

3. Quantity of agricultural and livestock products handled in processing plants.

4. Stocks of the most important agricultural products in warehouses.

5. Imports and exports of crop and livestock products (showing net weight of each product).

6. Internal movement of principal agricultural products (by principal means of transportation).

7. Agricultural wages.

8. Agricultural credit.

9. Total consumption of fertilizers and pesticides.

10. Prices received by farmers from the sale of products.

See also the more extensive list of topics given in the appendix below, suggested to the countries for study.

B. That the Inter American Statistical Institute, in cooperation with the Food and Agriculture Organization, take the necessary measures to help those countries which desire to organize or improve their current crop and livestock statistical programs.

C. That the countries study the desirability of adopting a system of statistical sampling to obtain data for their investigations, and that the specialized international organizations collaborate with them in the application of sampling methods.

D. That IASI and FAO continue the development of their training programs in crop and livestock statistics in Latin American countries.

E. That the countries utilize to the maximum the results of the 1950 agricultural census, to establish firm bases for the initiation of agricultural statistics, tabulating the totals for their smaller territorial and political divisions such as municipalities, cantons, etc.

F. That in collecting data on crop production, the form be indicated, as for example, unhusked rice, raw cotton, ginned cotton, etc.

G. That IASI and FAO furnish information on agricultural statistics through translation and publication of the available documents on this topic.

H. That the various countries establish university courses in agricultural statistics, especially in the schools of agricultural engineering and economic sciences.

I. That the various countries establish or improve their permanent office of agricultural statistics.

J. That the various international organizations interested in agricultural statistics sponsor meetings of technicians in this subject, in order to lay the bases for international comparability in this field.

Appendix Relating to Resolution 23:

More Extensive Preliminary List of Topics for Agricultural Statistics, from Report of Working Group IV

(Included for information and technical reference.)

1. Principal crops: Area cultivated, area harvested, area of crop failures (indicating causes). It is recommended that the condition in which the product is harvested be indicated.

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2. (a). Livestock: Number of head, by kinds, principal purpose for which kept, and sex. It is recommended that purpose be shown for catle and hogs only, and sex for cows and sows of reproductive age. (b) Livestock production: Meat, milk, cheese, butter, etc.

3. Agricultural and livestock markets.

4. Quantities of products handled in processing plants.

5. Consumption of crop and livestock products on the farm: (a) For human consumption; (b) for feeding animals; (c) for seed; (d) for other uses.

6. Stock of agricultural products in warehouses, ports, etc.

7. (a) Exports and imports (it is recommended that the customs statistics show the net weight of each product); (b) internal movement of agricultural products (by principal means of transportation).

8. Consumption of agricultural and livestock products in the country.

9. Storage facilities: (a) Kind, number, capacity, location; (b) losses during storage.

10. Processing plants for crop and livestock products: Kind, number, location, capacity.

11. Farm laborers, classified by sex, and age (15 years and older and under 15): (a) Paid; (b) unpaid; (c) wages.

12. Agricultural credit: (a) Number and type of credit organizations: (1) Private; (2) official. (b) Total of loans: (1) Long term: (2) medium term; (3) short term. (c) Rates of interest: (1) At official institutions; (2) at private institutions; (3) from private individuals.

13. Agricultural taxation.

14. Consumption of fertilizers and soil correctives.

15. Consumption of pesticides: Fungicides; insecticides; killers, for a cultural use.

16. Agricultural prices: (a) Prices received by the farmer. (b) Prices paid by farmers: (1) For articles used in production; (2) for other articles. (c) Freight rates.

17. Value of crop and livestock production.

18. Cost of production of the principal agricultural products.

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(See also the Bibliography Section of this Journal)

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Resolution No. 23 of the II Inter-American Statistical Congress, Bogotá, January 16-27, 1950, titled "Agricultural Statistics (Including Minimum List of Topics)."

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USING THE CENSUS OF AGRICULTURE*

By Conrad Taeuber, U.S.A.**

RESUMEN

Este artículo trata del papel singular que el censo agropecuario juega en un sistema nacional de estadísticas agrícolas, y de los diversos usos que sus resultados tienen en la dirección de la vida económica de una nación. El censo, que en efecto constituye un inventario de los recursos agropecuarios de un país en un momento dado, proporciona un punto de partida del cual pueden proyectarse estimaciones hacia el futuro, y con el cual pueden verificarse las estimaciones continuas disponibles. Ofrece una base que permite interpretar estadísticas que muestran cambios anuales o estacionales, así como también una fuente indispensable de información que si bien puede no necesitarse mensual, trimestral, o aún anualmente, es esencial para la comprensión de la agricultura de una nación.

Se hace mención de las recomendaciones internacionales relacionadas con el alcance y cobertura del censo agropecuario. El autor destaca que si bien las necesidades individuales variarán con respecto al número y clase de preguntas de la boleta censal, en la mayoría de los países americanos la agricultura es la industria dominante en el sentido de que ninguna otra actividad económica ocupa una proporción tan grande de la población económicamente activa. Como consecuencia de esto, la disponibilidad de información adecuada sobre la situación y el desarrollo de la agricultura de una nación es de profundo interés para los agricultores, los comerciantes y el gobierno.

Farmers, businessmen, government officials and all who are concerned with the national welfare have a deep interest in the condition and development of agriculture. The food and fiber which the nation uses is in large measure the product of its agriculture; while in many countries agricultural commodities are also important sources of income from trade with other countries. In most of the American countries agriculture is the dominant industry in the sense that no other economic activity occupies so large a proportion of all workers. To deal with the many questions relating to a country's agriculture requires facts. Increasingly the demand is for facts that can be expressed in numbers and that can be verified. Not only should they provide an accurate picture of the situation at a given time, but they should also afford a means of observing changes that are taking place.

The census of agriculture is an integral part of a system of agricultural statistics. It provides a starting point from which estimates can be

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* Originally prepared by Mr. Taeuber as a reference document (IASI doc. 1003a) of the III Session of the Committee on the 1950 Census of the Americas, held in Washington, D.C., June 11-15, 1951.

** At the time of preparation of this paper, Mr. Taeuber was chief of the Statistics Branch, Food and Agriculture Organization of the United Nations; at present he is assistant director of the U. S. Bureau of the Census.

carried forward into the future and against which available current estimates can be checked. In addition, it provides information for small areas and for subgroups within the population, whereas current estimates generally give information only for larger areas or larger groups. It gives an opportunity to assemble information which will show the interrelationships among the various aspects of the nation's agriculture and also conditions on various kinds of farms. Moreover, it provides an opportunity to secure information which, while it is essential to an understanding of a nation's agriculture, may not be needed monthly, quarterly, or even annually.

A census helps find the answers to questions such as: What is the contribution of agriculture to the total national economy? What part of the nation's resources and of the nation's labor force is devoted to agriculture, and what part of the nation's total income comes from agriculture? How many farms and farm families are there? How are they distributed within the country? What and how much do the nation's farms produce of commodities such as cotton, coffee, rice, wheat, beef, etc.? What is the average yield per hectare or per animal? How much does the average worker produce? How does productivity vary from one part of the country to another? How do the yields of this country compare with the yields of other countries? What and how much land, livestock, equipment, machinery, and capital are available to the nation's farmers and how are they using these production requisites? How much and what products are produced primarily for consumption on the farm and what products are produced for market within the country, as well as for export? What is the role in the nation's agriculture of large and small farms, of general farms and specialized farms, of owner-operated farms, of latifundia, and of other types of farms which may be found in the country? Under what terms do the workers on farms have the use of the land; are they owner-operators, tenants, or laborers? What is the contribution of landlords, tenants, and laborers to the production process and how do these and other persons share in total production? What is the relative role of hired labor and labor supplied by the farm family, of resident labor and migratory labor, of year-round labor and of seasonal labor? Who are the farm people? What are their characteristics? Do they live on individual and scattered farmsteads, or are they grouped together in villages, communal farms, etc.? How do their incomes and levels of living compare with those of persons in other occupations? To what extent do they share in educational and other facilities provided by the community? How does their housing compare with that of other workers in the country?

The extent and nature of the answers to such questions which may be provided by a census varies from country to country, for the exact scope of the census of agriculture in each country depends to a large extent upon the statistical work already in progress and the statistics already available. Where a crop reporting system has been in operation, the emphasis has been somewhat different from that of a country without such a system. Where a census of agriculture had not been taken for many

years and where there was a dearth of any statistical information concerning the country's agriculture, there was much pressure to include many items on the schedule in order to get at least a part of the information which was considered essential. But even in the United States, where there is a highly developed system of current agricultural statistics, the pressure to include items in the schedule was so great that the schedule which was finally used for the 1950 Census of Agriculture included 334 questions.

The FAO recommendations for the World Census of Agriculture set forth the broad categories as:

1. The number and size of individual holdings, as well as the tenure of the operator.
2. Agricultural lands and their utilization, classified as: (a) Crop lands (areas under important grains, fruits, vegetables, etc.); (b) pasture land; (c) forest land.
3. The number of farm livestock, including poultry, classified by kinds and purposes.
4. Agricultural equipment and machinery, including farm buildings and permanent improvements, farm implements and machinery by classes and whether or not the farm used mechanical power, animal power, or only human labor.
5. The current year's total harvested production of the major agricultural commodities.
6. The farm population, including the family of the cultivator and other persons employed on the farm.

Based on the recommendations made by FAO, the Third Session of the Committee on the 1950 Census of the Americas recommended that the American Governments which participated in the Census of Agriculture tabulate their results in such a way that they would show: [1]

1. Totals for each of the items contained in the schedules relative to: (a) Area; (b) tenure; (c) land utilization.
2. For annual crops or those in rotation: (a) Number of holdings reporting each crop; (b) area; (c) production.
3. For pasture and forage crops: (a) Number of holdings reporting for each type; (b) area.
4. For trees, vines, and shrubs: (a) Number of holdings reporting for each variety; (b) area (or number of trees of bearing age); (c) production.
5. For livestock and poultry: (a) Number of holdings reporting for each species; (b) number of animals by age and sex as enumerated.

It was also recommended that wherever possible countries prepare tabulations showing the characteristics of their farms by size groups, so that they would show the differences among small, medium, and large farms. The tables especially recommended include:

1. Number and area of holdings, by size.
2. Number of holdings classified according to specified numbers of cattle. Those countries that do not find it possible to include the above-

[1] Resolution 33 of the III Session of the Committee on the 1950 Census of the Americas, held in Bogotá, January 1950.

mentioned data by size of holding in their regular tabulations might attempt to do so through sample tabulations.

3. Tenure by size of holdings.
4. Total area of holdings, by size of holdings and tenure.
5. Land utilization by size of holdings.
6. Use of mechanical power by size of holdings.
7. Number of holdings classified by area of arable land and size of holding.
8. Number of holdings and specific area of a principal crop, by size of holding.

The information gathered in a census is ordinarily tabulated and published in such a form that it will be useful to anyone who is concerned with the problems of agriculture. Moreover, it is frequently possible to bring together the data from a census of agriculture with those from censuses of population and housing and thus to secure a more comprehensive picture than would be possible from only one of those sources. The government uses are many and numerous; there is scarcely a government department which does not at some time wish to have information about farmers as producers of commodities which are important to the nation; farmers as consumers of machinery, fertilizers, insecticides, and other production requisites; farms as the source of a large proportion of the nation's manpower; farmers as users of transportation, marketing, and similar facilities; farmers as taxpayers; farmers as consumers of food, clothing, and shelter; or farmers as presenting special problems in regard to incomes, employment, education and other community facilities and many similar questions. Farm organizations themselves have a major interest in the information they can get about their constituents and their problems. In fact, farm organizations, in the absence of adequate statistical information, have often found it necessary to collect their own statistical information. Banks and credit agencies look to the census as an important guide to the determination of their policies. Many business establishments deal directly with farmers as suppliers or as purchasers of their products, and they in turn need census and other information for the intelligent guidance of their operations. And in recent years, with the growth of the work of international organizations, governments have found it useful to be able to compare their own figures with those for other countries, and to be able to have the information for a number of countries available when international action is under consideration.

Governments are generally the major consumers of the results of a census of agriculture. Programs of food management or of agricultural development call for the results of such a census. Fortunately there are few instances like that of West Bengal where it was found that the absense of essential information had aggravated the famine conditions of the early 1940's by impeding the movement of food to shortage areas from where supplies were adequate, and, therefore, a census of agriculture was taken to help in planning the prevention of a recurrence

of such a disaster. More recently there are instances where systems of agricultural statistics were developed to help meet the problems of areas threatened by famine. Such dramatic situations are not common, but every effort at food management requires information on the areas where production takes place and the volume of that production in "normal" periods as well as in the present. The conditions under which the crop is produced, the extent to which it comes from small or large farms, and the probable requirements for animal feed and for human food are also items of necessary information, if an effort is to be made by the government to guide the movement of the product from the producer to the ultimate consumer.

If agricultural commodities are to be moved to market promptly after the harvest, or if they need to go to processing before they reach the market, or if storage facilities are needed, such information is indispensable. This is especially important in those instances in which an effort is being made to modify production patterns, whether through a general increase in production, or through special attention to increases of a few strategic crops. Even in areas where cropping patterns have been long established, study frequently reveals that a better planning of marketing, transportation or processing arrangements might result in substantial increases in the proportion of the crop which actually reaches the consumer. Similarly, if the agricultural policy calls for increasing production by the small farmers of a crop previously grown only on large farms, or vice versa the information showing location, size and characteristics of the farms involved is invaluable in planning for the orderly handling of the product when the new policy has become effective.

Many governments are planning colonization projects, bringing under cultivation lands that have not previously been devoted to agriculture at all, or those in which the former use, such as grazing, is to be replaced by another and more intensive form of land use. Sometimes this means establishing the new colony in the midst of already developed communities; but often it means going to the edge of settlement and there establishing the new pattern. An intimate knowledge of the area which is to be transformed is obviously essential, whether the transformation is through irrigation, drainage, clearing the forest, plowing up the land, or new plantings. Here the knowledge of the old is essential to the development of the new, even though the knowledge of the previous conditions will be obsolete when the new ones are established. In such situations the contributions of the census may be more significant because of the information it gives about conditions in an already established area where conditions are similar to those expected to prevail in the new community. Through an analysis of such information it is possible to test the possibility that development will be according to the plans, for it is possible to see what experience actually shows in another place. Such an analysis can help avoid costly mistakes through drawing attention to important elements in the plan which may make for success or failure of the program.

Some governments establish the prices at which certain agricultural commodities are to be sold and for a few commodities the entire quantity which enters the market is sold to the government. The government then assumes responsibility for storage, processing, and marketing whether for domestic use or of use abroad. Obviously the establishment of prices will influence future production and, if such activities are to be successful, it is necessary to have information on the relationship of prices to the volume of production, the extent to which fluctuations in prices are likely to increase or depress production, as well as the extent to which the agriculture of a country is so organized that normal price fluctuations would have little or no effect on the volume of production or marketings. In so far as price adjustments are relied upon to modify a discrepancy in the incomes of farm workers and other workers, it is again essential to have the type of information provided by a census which shows the volume of production of various classes of farmers, as well as the potentials for increasing production; particularly with reference to available land, workstock, labor, and equipment.

Governments in all parts of the world, and especially those in the economically underdeveloped countries, are engaged in programs for expanding production of agricultural commodities and food consumption. In some cases major reliance in promoting these programs is placed on governmental efforts; in others, major reliance is given to private efforts. If agricultural production is to increase with sufficient rapidity to meet the growth in population in many of these areas, it is essential that such programs proceed more rapidly and more effectively than has been the case hereto. FAO reports indicate that even if present plans for expanding agricultural production should be successful, the volume of food available per person in large areas of the world in 1952-53 would still be less than was the case before the war, and that at the prospective rate of expansion it may be 1960 before levels of production per person in Latin America would equal those of the late 1930's. It is obvious that if it should be desired to increase production more rapidly than present programs call for, it will be necessary to revise these programs upward. Here again the responsible authorities are dependent upon information which shows what the current situation is and the points in the present agricultural system of a country at which increases can be secured, as well as information which provides some help in anticipating difficulties that may be encountered, such as lack of livestock or other sources of power, lack of land, or lack of necessary equipment.

Land reform and the improvement of the lot of the worker on the land are cardinal elements in the agricultural policies of many countries. Normally the census is the main source of information on the numbers of tenants and owners, as well as the numbers of persons who hold land under other tenure arrangements that prevail in the individual countries. Moreover, this information is available for small administrative units

within the country. If tabulations are so arranged, information can be presented showing the distribution by size of holdings of the various tenure groups and the contributions which the several tenure and size groups make to total production of specified commodities. Information can also be had on the living conditions which prevail among the respective tenure groups and, thus, information is at hand for more intensive analysis of problem areas, as well as for the formulation of remedial measures.

Farmers themselves constitute an important group of users of census data. The individual farmer can find in the census reports for a locality information by which he can compare his own performance with that of the averages for his area, with the averages for the appropriate groups of farms. He can also get the measure of the extent to which crops in which he is interested are being grown and the extent to which production is likely to meet his own estimates of demand. Local, regional, and national farm organizations have found such data of great practical utility not only in dealing with the marketing problems relating to individual commodities, but also in giving their farmer members advice on changing situations and thus help in the adjustment of production patterns. Farm organizations likewise are major users of agricultural statistics in bringing their case before government agencies or in negotiations with representatives of other groups in the country. In the absence of official data concerning the agriculture of a country, farm organizations have frequently found it necessary to develop their own statistical services so that they would be informed of the problems and needs of their members.

As agriculture becomes more and more a commercial undertaking, at least in respect to certain commodities, there is an increasing need for reliable information on the part of the businessmen who perform the services necessary to transform the raw agricultural commodity on the farm where it its produced into the finished consumption goods in the hand of the ultimate consumer. Buyers need to be kept informed concerning sources of supply. Processors need information on the changing volume of production in local areas so that they can plan for necessary modifications in their programs. Transportation agencies need to keep abreast of changes in the volume and type of production in small areas so that necessary arrangements for transportation of goods may be made and losses due to inadequate storage may be kept at a minimum. Suppliers of farm requisites, such as tools and machinery, fertilizer, feed and seed, likewise require information which will permit them adequately to anticipate the demands for their commodities. Everyone who has goods which he wishes to sell to the farmer is interested in the location and character of the market for his goods and in the question of whether or not he is concentrating his sales efforts in the areas which are most likely to yield the hoped-for results. In the United

States advertisers and publications addressed to farmers have been particularly active in utilizing census data to show them the extent to which their current efforts are reaching the most promising markets in the farm field.

In recent years most governments have accepted the principle that international action can be helpful not only in meeting international problems, but that frequently it is of assistance also in meeting internal problems. They have banded themselves together in a number of international agencies, and, to further international action, they have agreed to keep each other informed of the developments in the subject field with which each of the agencies is concerned. Although the needs for and uses of a census of agriculture are primarily those of the citizens of the country which takes the census, the availability of census data also makes it possible to meet certain of the international obligations for agricultural information.

The member governments of FAO have been concerned with problems of scarcity and gluts of international commodities and have asked their commodity committee, as well as the staff of the Organization, to keep a close watch on supplies, prices, and prospective supply and demand of certain key commodities. They have considered the establishment of action programs to deal with some of these problems and although no separate agencies for this special purpose have been established, the need for constant review of the situation is generally recognized. If action in these fields is to be effective, it must be based on full information. Census data are an important part of the information that is required.

It was stated at the outset that the census of agriculture is an integral part of a system of agricultural statistics. Current agricultural statistics are indispensable to the management of the affairs of a contemporary government. The census plays an important part in providing a background against which to interpret statistics showing year by year, or season by season, developments, and it also provides an indispensable source for data concerning a country's agriculture which ordinarily are needed less frequently than those of annual production. The needs of individual countries will vary. The challenge to the administrators of the census is to prepare their information in such a way that it will be useful in meeting the needs of the country which provided for the census. If the census material is presented in such a way that it contributes directly to meeting the needs of a country, the country's sizable investment in the census will have been justified and there should be no difficulty about public authorization for another census at a later date when it is desirable to have the country take another inventory of its agriculture.

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AGRICULTURAL CENSUSES OF THE AMERICAN NATIONS SINCE 1946: SELECTED INFORMATION*

Country	Date of enumeration	Area of the country (sq. km.)[1]	Total number of holdings	Area of land in holdings[2]				
				Unit of measure[3]	Total	Under crops	Under pasture	All other
Argentina	11- XI-52	2,808,492	---	---	---	---	---	---
Bolivia	5- IX-50	1,098,581	---	---	---	---	---	---
Brazil	1- VII-50	8,516,037	---	---	---	---	---	---
Canada	1- VI-51	9,960,170	623,091	acre	174,046,654	62,212,148	10,005,126	101,829,380
+ Chile		741,767						
Colombia	9- V-51	1,138,355	---	---	---	---	---	---
Costa Rica	22- V-50	51,011	43,086	manzana	2,593,384	383,416	536,659	1,673,309
+ Cuba		114,524						
Dominican Republic	6-VIII-50	49,543	281,229	tarea	37,737,975	---	---	---
+ Ecuador		275,000						
El Salvador	13- VI-50	20,877[4]	175,317	hectare	1,503,098	350,387	684,037	467,774
Guatemala	18- IV-50	108,889	341,191	manzana	5,244,719	1,547,153	821,506	2,876,060
Haiti	7-VIII-50[5]	27,750	---	---	---	---	---	---
Honduras	24- III-52	115,205	---	---	---	---	---	---
Mexico	2- V-50	1,969,367	---	---	---	---	---	---
+ Nicaragua		148,000						
Panama	10- XII-50	74,010	85,363	hectare	1,151,743	245,895	[6]	905,848[6]
+ Paraguay		406,752						
+ Peru		1,249,049						
United States	1- IV-50	7,827,680	5,384,000	acre	1,133,418,000	336,349,000	[6]	797,069,000[6]
Uruguay	?- V-51	186,926	85,258	hectare	16,973,632	1,339,688	14,439,723	1,194,221
Venezuela	26- XI-50	912,050	248,738[7]	hectare	22,747,791	1,426,285	13,823,567	7,497,939

* This table has been prepared from information available to the IASI Secretariat as of March 1, 1953. Three dashes (- - -) signify data unavailable.

\+ Information on these countries does not fall within the defined period of the "1950 Census of the Americas," i.e., the years 1947-1953. The countries which have not yet taken censuses under this program are: *Chile*, most recent census 1935-36; *Cuba*, most recent census 1946; *Ecuador*, no census ever taken; *Nicaragua*, most recent census 1940; *Paraguay*, most recent census 1943-44; *Peru*, most recent census 1929.

1 Source: United Nations *Demographic Yearbook 1952*, for all countries except El Salvador, for which figure was revised as a result of the 1950 census work.

2 For sources of the data, see the following list.

3 For purposes of conversion, the hectare is equal to: 2.471 acres; 1.56 manzanas; 15.9 tareas. Conversely, 1 acre = 0.404 hectare; 1 tarea = 0.06 hectare; 1 manzana = 0.64 hectare.

4 See footnote 1.

5 Some questions included in the population census schedule.

6 Area of land under pasture included in column for "All other."

7 Excludes holdings of Indian population in the jungles.

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URUGUAY: *Resumen de Resultados del Censo Agropecuario, 1951.* Montevidéo, 1952. Ministerio de Ganadería y Agricultura. Dirección de Agronomía. Sección de Economía y Estadística Agraria. 9 p.

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FOOD BALANCE SHEETS*

RESUMEN

Este artículo explica lo que constituye una hoja de balance de alimentos, describe sus principales usos nacionales e internacionales, trata de los problemas relativos a su construcción, y destaca la necesidad de disponer de tales hojas en una escala internacional más amplia de la que actualmente existe. La América Latina es la región que tiene el vacío más grande en el suministro de la información respectiva.

Las hojas de balance de alimentos proporcionan un medio para determinar, paso a paso, y producto por producto, la cantidad estimada de alimentos disponibles en el mercado al por menor para el consumo humano. De los datos recolectados se calcula la disponibilidad per capita de los varios productos, la que a su vez se convierte en unidades nutritivas comunes per capita (i.e., calorías, proteínas y grasas.)

Los datos reunidos en las etapas sucesivas de la construcción de las hojas de balance presentan un cuadro resumido de muchos aspectos importantes de la situación agrícola y la cantidad de alimentos de un país dado, y proporcionan una base de información estadística para programas nacionales de desarrollo. Además de esto, constituyen una herramienta indispensable para el análisis de la existencia y calidad de los alimentos en las diferentes regiones del mundo, y de éste, en total.

What a food balance sheet is

The main purpose of a *food balance sheet* is to estimate the quantity of food supplies moving into consumption within a given country. Provided statistics of crop and livestock production, trade, and food utilisation are reasonably satisfactory, food balance sheets can do this at little cost. Dietary surveys often provide important information about the food consumption of small occupational or geographical groups. But because they are very costly, they can seldom be done on a sufficiently large scale to give an adequate picture of a country's food consumption as a whole. The food balance sheet is a statistical method which starts, commodity by commodity, from the data of food production, trade, and movement in stocks, makes appropriate deductions for the amounts used for animal feed, seed, non-food purposes, and losses due to distribution and other wastes, and so arrives at the estimated quantity of food supplies available at the retail level for human consumption. The national average per head of these food supplies is then obtained merely by dividing by the total population. The final stage is to convert the per head supplies of the various food commodities into common nutritional units, i.e., calories, protein and fat. Nutritional conversion factors calculated for most foodstuffs enable this to be done. (See "Food Composition Tables for International Use," FAO, October 1949.)

* Prepared by the Food and Agriculture Organization of the United Nations, as a reference document (IASI doc. 1230a) of the II Sesion of the Committee on Improvement of National Statistics, held in Ottawa, Canada, September 29 — October 10, 1952.

National uses of food balance sheets

Food balance sheets, by bringing together all of the food data and a large part of the other agricultural data of a country, concentrate in a single picture many important aspects of the food and agricultural situation in a country. Some of the principal advantages of national food balance sheets are as follows:

1. The expression of food supplies per head in terms of calories, protein, and fat makes it possible to compare in a convenient and significant form national consumption levels from one period to another.

2. Deficiencies in the national diet in relation to nutritional requirements are disclosed.

3. The data contained in food balance sheets compiled over a series of years may make possible the construction of index numbers of food production and consumption. Food balance sheets in the Organization for European Economic Cooperation (OEEC) countries of Europe are already being used for this purpose.

4. The quantities of food crops used for feeding livestock, as shown in food balance sheets, may indicate the degree to which primary food resources are being used to produce animal foods and may serve as useful data in analysing livestock policy or the pattern of agriculture.

5. Comparison of the quantities of food available for human consumption with those imported or exported will indicate the extent to which a country is depending on imports to meet its food requirements, or conversely the proportion of food production utilised to earn foreign exchange.

6. In less statistically advanced countries the compilation of food balance sheets will frequently disclose inadequacies in national statistics and point up some of the principal deficiences whch need to be corrected. For example, comparisons of food balance sheet results with dietary surveys will sometimes lead to the conclusion that production of certain foodstuffs, e.g., grain, starchy roots, or livestock products, has been understated in official statistics. An important incentive to the improvement of national statistics is thus provided.

Since the consumption estimates contained in food balance sheets are concerned only with the national average they give no indication of the diets obtained by people living in different parts of a country, or in different occupations, or earning different incomes. Such supplementary information can be obtained only by diet surveys and surveys concerned with studies of family living and the like.

It is nevertheless clear from the above that the information brought to light by food balance sheets may be extremely useful to governments in helping in the planning of production, trade and nutritional programs, and in stimulating interest in better national statistics.

International use of food balance sheets

Aside from their usefulness to individual governments, food balance sheets are an indispensable tool for analysing the food situation in different regions of the world and in the world as a whole. Because the range and accuracy of national statistics vary greatly, comparison of the food balance sheets of one country with those of another has a more limited validity than comparison of food balance sheets of one period with another in a single country. Nevertheless, even within such limits, it is possible, for example, to assess trends in the food situation in different parts of the world by inspecting the levels of calorie, protein, and fat intake shown in food balance sheets. FAO has in fact since its inception, regularly used food balance sheets in its periodic appraisal of the world food situation. Estimates established by FAO for a pre-war period (usually 1934-38 average) have served as the basis for comparison. Food balance sheets for the post-war years, kept up to date as far as possible, have enabled FAO and other agencies like OEEC to appraise the trends.

Foods balance sheets were also the primary tool in FAO's first World Food Survey, the results of which were published in 1946. In this survey, the food needs of the world and of different parts of the world were compared with actual pre-war consumption levels as shown by food balance sheets. In this way it was possible to indicate the nature and extent of food deficiencies and to give some indication of the efforts required to make these deficiencies good. A second World Food Survey has now been undertaken by FAO, using the same methods, in which post-war progress towards target levels and the gap still to be closed are measured. This survey will be published shortly. The importance of these surveys lies in the fact that they provide a statistical background for international planning and the coordination of national development programs.

FAO is also examining the possibility of devising international index numbers of agricultural production for comparing agricultural output in different countries. In this sphere too, much of the material to be used will come from food balance sheets.

Problems of food balance sheet construction

The adequacy of a food balance sheet depends on the range and reliability of national statistics. National statistics may not account for total national producion of foodstuffs. Even when based on sound agricultural censuses, small holdings from which an appreciable part of total production is obtained, may have been omitted. In the case of fruits and vegetables, and starchy roots like potatoes, sweet potatoes, yams and cassava, difficulties exist in obtaining estimates of national production. It is especially difficult to estimate non-commercial production, i.e., foodstuffs grown by households for their own consumption.

National statistics on livestock numbers and livestock products are frequently inadequate for estimating milk, meat, and animal fat production. Officially estimated livestock numbers are in many cases too low, and the number of livestock slaughtered in abattoirs often represents only part of the total number of animals slaughtered in the country. Similarly, statistics of milk delivered to dairies represent only a segment of milk consumption. Total milk production may have to be estimated by other means, as for example, by consideration of the total number of animals milked and the average milk yield per animal.

Even more difficult problems arise in connection with the utilization of foodstuffs. Seeding rates per hectare for crops are usually fairly well established, but the quantities used for feeding animals must often be derived from many considerations. Feeding practices vary from country to country according to the quantity and quality of pastures, the degree to which animals are fattened, the prices of feedstuffs, etc. The actual quantity of grain and other foods fed to livestock will also vary from year to year depending upon the particular circumstances in each country.

Similarly, official data may not be available to determine completely how much grain and sugar is used for making alcoholic beverages, how much milk for butter and cheese, and how much oils and fats for purely industrial purposes like soaps, paints, and varnishes.

In many countries the food supply is often regulated by drawing from domestic stocks in lean years and by increasing such stocks when harvests are good. This chiefly applies to cereals, but also to meat, butter, cheese and sometimes other foods, provided storage facilities exist. Grain stocks in elevators and mills are sometimes available from official or other reliable statistics, but farm stocks may be difficult or impossible to estimate.

The above is a brief outline of some of the major problems met in compiling food balance sheets. There are also usually many points of detail that have to be settled. Answers to these problems cannot be given without a close scrutiny of all statistics available and a detailed knowledge of the farming, distribution, and processing practices, and of many other aspects of food and agricultural activities within a country. The attempt to construct a food balance sheet, especially in countries where official statistics are incomplete, is an exercise which calls for information from an innumerable variety of sources. Some general guidance on the problems encountered and on the possibilities of their solution are given in the "Handbook for the Preparation of Food Balance Sheets," issued by FAO in April 1949.

Need for more food balance sheets

Recognizing the value of food balance sheets as a basic tool in the analysis of progress made in improving the food position in all countries, the IV and V Sessions of the FAO Annual Conference recommended that Member Governments should submit their food balance sheets

to FAO and keep them up to date as a regular procedure. While the response to this request has been satisfactory from Europe, North America and Oceania, and from some of the larger countries in the Far and Near East, the coverage for the world as a whole is still far from adequate. FAO cannot properly fulfill one of its most important tasks, i.e., to keep the world food situtation under constant review, in the absence of a sufficient number of food balance sheets from important areas in the world. The gap is largest in Latin America. In this region comprising 22 countries, not more than three or four countries have so far responded to FAO's request. The position in this region is all the more serious, not only because the area is an important exporter of foodstuffs, but also because the food situation in the region has been undergoing significant changes in the past decades. In the interests not only of FAO's work but of member countries themselves, the preparation of food balance sheets would be an accomplishment of the greatest importance. It is recognized that until food and agricultural statistics are more fully organized, some countries may not be able to obtain reasonably valid estimates of food consumption by using food balance sheet methods. In such cases the preparation of food balance sheets every year is not recommended, since the annual changes disclosed would tend to be arbitrary and misleading. Countries undertaking food balance sheets for the first time should therefore prepare them for an average period of at least three years. This would greatly reduce the error from the absence of statistics on stock changes and would give a more reliable picture of the food supply. FAO stands ready to assist in this work.

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BASIC CONSIDERATIONS FOR THE ESTABLISHMENT OR IMPROVEMENT OF A CURRENT AGRICULTURAL STATISTICS SERVICE*

RESUMEN

Este artículo trata de los elementos que son de importancia fundamental en el establecimiento y desarrollo progresivo de un servicio de estadísticas agropecuarias continuas. Su contenido está organizado de acuerdo con los siguientes encabezamientos: Introducción; qué se desea, cuándo y por qué, de qué elementos se dispone y cuáles se necesitán aún, subdividido este título según se trate de elementos de orden administrativo y operacional, o de los de orden técnico e instrumental, o de aquéllos de orden cultural, económico y social; y medidas que convendría tomar.

Como etapas aconsejables en la planificación de un programa nacional de estadísticas agropecuarias, bien se trate de mejorar lo existente o de iniciar un nuevo programa, se presentan, en resumen, las siguientes: (a) Preparación de un inventario de la información existente; (b) evaluación objetiva de las facilidades y servicios existentes para la recolección de datos; (c) elaboración de un programa progresivo para el establecimiento o mejoramiento de un sistema de estadísticas agropecuarias continuas; y (d) presentación del programa a las autoridades gubernamentales competentes.

Introduction

The establishment and progressive development of any program, whatever its objectives and scope, requires the examination and constant reevaluation of a series of considerations basic to that program. The factors regarded as fundamental to the greater success of a current agricultural statistics service are the subject of this document; and these are emphasized for the very reason that their neglect or casual evaluation may constitute an important cause of the underdevelopment of these statistics, which are basic to adequate planning of agricultural economics programs.

What Is Desired, When, and Why?

The most important conclusion derived from the document "Objectives and Scope of an Agricultural Statistics System," published elsewhere in this Journal, is that in considering the establishment or improvement of this kind of statistical program, it should be made clear what statistical series are desired, how often during the year are needed, and the reasons justifying their preparation. To proceed without paying adequate attention to these points can lead to unforeseen complications in the

* Prepared by the Secretariat of the Inter American Statistical Institute as a working document (IASI doc. 1205a) of the II Session of the Committee on Improvement of National Statistics, held in Ottawa, Canada, September 29 — October 10, 1952. Some editorial corrections have been subsequently introduced.

development of the program, and perhaps its abandonment for lack of public interest. If the information produced by the program does not meet the needs of the consumers, that is, if the persons or agencies which are to use the information do not find concrete uses for it, the service will not enjoy the support necessary for its strengthening and expansion, regardless of the accuracy of the information. Like consequences may be expected if the information is incomplete or inexact, as well as when information, even though correct, is placed in the hands of the public too late to be of use.

Thus, the clear definition of what is desired, when, and why, is of great importance to the success of a current agricultural statistics program, as is also the availability of a series of basic elements upon which the program is to be built.

WHAT FACTORS ARE AVAILABLE AND WHAT STILL NEEDED?

The availability of a certain minimum of means, services, materials, and basic information is fundamental to the establishment or improvement of an agricultural statistics program, not only because these elements affect the achievement of its objectives, but because they determine the various methods and procedures which are to be used in the collection of the desired information. This in turn affects the choice of enumeration procedures; types of instructions for the enumerators if enumerative surveys are to be used; methods of editing and coding of the questionnaires; methods of estimating data, and of determining and reducing the error of estimates; as well as the periods for publication of the results. In short, adequate planning of the work beforehand and its execution depend upon the availability of the appropriate basic elements. If these elements are lacking, it might be advisable to devote the necessary time to obtaining them before undertaking a program of this nature, if the program is to have purpose.

Factors of an administrative and operational nature

Location of the agricultural statistics service (or services) within the governmental structure, and its relations therewith. Whatever the level of development of agricultural statistics in a nation, there almost always is at least partial and approximate knowledge of the agricultural and livestock production, generally made possible through the efforts of one or more government agencies which require certain agricultural statistical information for their operations. The next step is then to find out whether (a) only one, or several, government agencies are concerned; (b) what kind of data are obtained in these cases; and (c) if several offices are engaged in obtaining this data, whether there is duplication of effort and expenditure. It is important to investigate these points in order to determine to what extent the existing system can be utilized, and whether, if a new organization is required, the work will be the function of only one office or of several, and in the latter case what degree of coordination

must be achieved among these agencies. If all the work is embodied in one office, the extent of the cooperation which might be given by other governmental agencies should be ascertained.

The experience of countries with a well organized agricultural estimating and forecasting service indicates that this service should be the responsibility of a single official agency which enjoys the support and respect of officials and the public in general. This agency may be an integral part of the central statistical system, or it may be under a government department specializing in agriculture, working in coordination with the statistical system. That is, it may form part of a centralized or a decentralized statistical system. The judgment of which system is better can be made only in the light of the particular conditions of each country. The important point to emphasize is that only one government agency—fully supported by the other government agencies—should be assigned the preparation of the principal agricultural statistics series. Only in this way can there be achieved real unification of objectives and methods, and unnecessary duplication of expenditures, functions, and data avoided.

If the agricultural statistics service is included within the central statistical organization, it will have the advantage, among others less important, that its proximity to other statistical operations will facilitate its integration into the general system, encourage the use of common concepts and definitions, and permit full use of equipment and facilities existing in the central statistical organization. In addition, there will be constant and intimate contact between the producers of agricultural statistics and the producers of other statistics. On the other hand, however, there will be the risk that the gap between producers and consumers of statistics may become too wide.

If the agricultural statistics service is an integral part of a department of government specialized in agriculture, and particularly in agricultural economics, the agricultural statistics programs could be intimately related to the economic and social research programs which make use of these statistical series. One of the great advantages of this relationship is the close association thus obtained between the consumers of statistics and the persons responsible for the production of periodic data and other basic information. Use of statistical information in outlook work, in agricultural economic analysis, in agricultural extension, and other similar work, promotes a keen and healthy interest in the quality and quantity of the information. From these activities come suggestions for improvement with respect to the timeliness, scope, and dependability of the statistical series, and also with respect to the addition of new ones. Furthermore, they provide information which prevents the statistician from getting too far away from reality, since he knows that his work is necessarily subject to constant scrutiny and appraisal. This kind of organization may run the risk, however, of making estimates which are too highly subjective. The agricultural statistician may be influenced by the statistical consumer to

a greater extent than is desirable from the viewpoint of good statistical practice. But this disadvantage might be counteracted by the resulting benefits—the gap between the producer and consumer of statistical data is narrower than in a centralized statistical system.

The type of coordination to which this service should be subjected depends, then, upon whether the agricultural statistics service forms part of a centralized or a decentralized system. In the former case a direct identification with the other statistics used in the country is achieved, and the emphasis with respect to coordination should be placed on relating the production of agricultural data to the needs of those who are to use the data. In the case of decentralization there is direct awareness of these needs, and the coordination should be oriented toward achieving integration of agricultural statistics within the national statistics system. The conditions peculiar to each country will point out the most desirable path.

Administrative organization of the agricultural statistics service. Independent of whether or not the agricultural statistics service is an integral part of a centralized or decentralized statistical system—although perhaps this is especially important in the latter case—great attention should be paid to its internal administrative organization. Its efficient operation will depend in large part on whether the organization is appropriate for the particular needs of the country and on whether there is a constant effort to make required improvements.

If the country in which the service operates is small, probably no more than a central office in charge of the whole program will be required. But if it is large, regional offices directly dependent on the central office will be necessary in order to make possible the obtaining of adequate data and to facilitate field work. In any case the central office must be able to count on a sufficient number of sections to ensure better division of labor. It is advisable that sections be organized at least on administration, crops, livestock and derived products, statistical methodology, and economic analysis, or that there be sufficient personnel to take care of these functions. The number of sections will, of course, depend on the agricultural activities of the country and the needs of the service. If regional offices do exist, it may often be found that their administrative organization in a form similar to that of the central office would be justified. It is desirable that the estimates made by the central agricultural statistics office be reviewed by an agricultural estimates board, upon which should rest all the responsibility for the information published.

In addition, the following essential points with respect to the administrative organization of an agricultural statistics service should be given careful attention, since although somewhat elementary, they may constitute real problems on many occasions. Any responsible governmental authority which advocates a good agricultural statistics system should be sincerely convinced of the importance of these elementary factors.

Personnel. The availability of sufficient personnel, well-trained and stable is of the greatest importance. Little or no progress can be made in an office where the personnel is insufficient, inexperienced, and lacking the training necessary to carry out the job. The personnel of an agricultural statistics office, especially that responsible for its technical orientation, should posssess clear knowledge (theoretical and practical) both of agriculture in general and of statistics, and have an interest in numbers and what they show. In addition to the above qualities, each staff member to a greater or lesser degree should have: Mental capacity to visualize the entire work of the office and to undertand and carry out whatever assignments are made to him; common sense and intellectual integrity which would enable him to weigh his decisions adequately with respect to the techniques to be followed and to be satisfied only with results of high quality, regardless of the quantity of details which must be attended to; enthusiasm and devotion to his work; and ability to get along with the rest of the personnel of the office and with the public, whose respect and confidence he should gain. Adequate salary scales are necessary to attract and hold personnel which is qualified and interested in the work.

But even when the office has all the qualified personnel it needs, the problem of training is a continuous one, especially with beginners or with persons destined to occupy higher positions within the service, in the future. Periodic discussion of the objectives of the office, its methods, and general operational procedures, is of great help in training as well as in keeping alive the spirit of enthusiasm and interest on the part of the personnel. When a single individual is being trained, this person should receive a general explanation of the work and should be assigned specific tasks under adequate and intelligent supervision until, within a reasonable period, he shows signs of having mastered the specific techniques.

It is highly useful for each employee to understand clearly what his own specific functions and responsibilities are, and also to have an idea of what those of his fellow workers are. In addition, proper delegation of authority is fundamental to the smooth running of any office.

Constant and adequate supervision of work at all levels is also a factor which should always be kept in mind, especially if the program is one which has just been started. Those who carry out the program should be persons of integrity and diligence, and above all should be able to do themselves the same work that they supervise. Furthermore, they should be tactful persons with social awareness, so that they can make recommendations and suggest desirable changes in a friendly though firm manner.

Office space. The availability of sufficient office space is an important factor. Excessive crowding of personnel is not conducive to the production of a good day's work. It is usually equally undesirable to have the personnel scattered throughout several offices. The location should have adequate light and ventilation and the proper temperature

for working. There will be a greater tendency toward orderly work if the desks, filing cabinets, tables, and other materials are well arranged and distributed throughout the available space. These observations with regard to office space in the central office apply also to that of the regional offices, if any.

Equipment. This is a factor which is often overlooked or given insufficient attention. An office should be provided with enough appropriate equipment, kept in good working condition, to ensure that the output of work by the office is kept at normal. It is also important that an agricultural statistics office have available transportation equipment or the funds to cover extensive travel, since part of the personnel will be going to the field frequently in order to investigate crop conditions and the farmers' problems, all of which gives their work greater objectivity. Furthermore, such equipment and funds are indispensable during the periods of field work when surveys by direct enumeration are being carried out.

Files. The correct maintenance of a series of files of various kinds is fundamental to the smooth running of an agricultural statistics office. Files of statistical series, tabulations, methodology and operating procedures used, lists of farmers, questionnaires, etc., must be consulted and revised constantly. If proper attention is given to the location and system of filing, the work of those who consult the files will be greatly facilitated.

Budget. The underdevelopment of agricultural statistics in many countries is due to a large extent to lack of funds, making it impossible to obtain qualified personnel and to meet operating and other essential expenditures of the program. Thus, one of the most important factors contributing to the success of the program is that the service have sufficient funds available and at the right time. In fact, the whole program will be very largely conditioned by the amount of funds provided.

Obtaining funds adequate for fulfilling the objectives of the program in its several stages should constitute one of the most essential tasks of the administrators of the service. The budget should be presented to the proper authorities with sufficient clarity and justification to insure approval.

The contribution of semiofficial and private organizations. It has been noted above that a certain number of governmental dependencies which can provide some statistical information on agriculture and livestock may already exist. This work is usually also carried on by semiofficial and private organizations. Many producers' associations (coffee, sugar, cotton, wheat, livestock, etc.), banks, and agricultural cooperatives, and others have taken it upon themselves to prepare series of data which are often of great value. It is of great interest to find out what these data are, and what role the producing organizations are willing to assume. Is it advisable that these organizations continue producing data? Do they wish to continue working independently, or are they willing to cooperate

with an official agricultural statistics office? If their desire is to work separately, what entity will have greater authority with respect to the information which is made available to the public? Will the duplication of data, effort, and expenditure be justified? Would the adoption of legal provisions to prevent this duplication be advisable? On the other hand, the use that can be made of high quality data produced by an association of this kind, in the planning and development of the work of the official agricultural statistics office, should not be overlooked.

Communication and transportation facilities. One of the most costly factors in the functioning of an agricultural statistics program is intimately related to the system of communication and transportation, as are also the speed and efficiency of the enumerative work. Answers to such questions as the following are needed:

Does the country have a rapid and efficient system of communications? Is there a rural mail delivery service? Does the transportation system cover the entire country? What is the condition of the available roads during the various seasons of the year? Whether or not the country possesses an adequate system of communications and transportation is a very vital factor, especially in large countries. The methods of investigation that will be employed, and consequently, the kind of field operational techniques, depend to a considerable extent upon this system. In a country where there exists a rapid and efficient rural mail service, the method of voluntary mail sampling can be successfully used. On the other hand, if the surveys must be made by direct enumeration, the size of these may be appreciably reduced because of high transportation costs or deficiencies in the transport system. How can zones be reached where there are not highways or railroads? How much would such an operation cost? Would efforts to reach these zones be justified? How fast can the task of enumeration be completed under unfavorable transportation conditions? How often can the inquiries be made because of this? Even though the transportation and communications system of a country may be good, it is always important to make an inquiry with respect to the facilities available.

Factors of a technical and instrumental nature

Just as it is fundamental to know the availability and quality of the physical means and services essential to the functioning of an agricultural statistics service, so it is also important to have similar knowledge of a series of technical materials and data. Some of the latter may be obtained from various sources. Those that are considered most important are discussed briefly below.

Census data. An agricultural and livestock census provides valuable data for the general planning of a system of current agricultural statistics. A census of this kind presents an over-all picture of a country's agriculture at a given date—number of farms, their crops, livestock, distribution of these, and other elements. Ability to refer current estimates to a base period, in order to establish comparisons and make necessary

adjustments, provides an invaluable tool. Furthermore the agricultural census constitutes one of the principal sources for preparing the lists of farmers, which are indispensable to the process of selection of possible samples upon which the estimates and forecasts will be based. The fortunate fact that 14 countries of the Western Hemisphere have taken agricultural censuses during the last 2-3 years gives reason to believe that the efforts of these countries to improve their agricultural statistics will be built upon a solid foundation. On the other hand, without such a census, a greater number of problems will arise which are difficult to solve.

Cartography. Even when there is general recognition of the importance which geographic and cartographic material plays in statistical work, the lack of economic resources has in many cases prevented the use of them in the agricultural statistics programs. Fortunately, the cartographic material of the countries of this hemisphere increased considerably, and its quality was improved, during the agricultural census programs of or around 1950, for which it was basic. This cartographic material may constitute an excellent point of departure for future work, but it should be reviewed to see whether fundamental revisions are necessary, and above all whether it must be completed. Whatever the sampling technique applied to obtain agricultural estimates, it is essential that the precise demarcation of all political and administrative divisions be known and available on maps. Area sampling cannot even be considered without the existence of appropriate cartography which indicates not only the very small political and administrative divisions but also enumeration segments within these. These maps, whether small or large scale, should show the location of the principal physical features of the regions included.

From these observations it may be gathered that no effort should be spared on the part of the government cartographic services to give their respective countries adequate maps and related materials. These may also be utilized for purposes other than agricultural statistics, resulting in large savings of time and money.

Information from subsidiary sources. In a previous section of this document the fact was emphasized that in some cases there are governmental and private offices which, as a part of their working programs, produce a certain amount of agricultural statistics data. In addition, some official entities prepare series of data related to agriculture, as a by-product of their regular administrative operations, the utility of which should not be overlooked. Much of this information may serve as a basis for checking the estimates made through the application of sampling techniques, in the determination of seasonal movements, and on more than one occasion as the basis of the estimates when this is the only source of information available. Statistics on transportation, processing of agricultural products, agricultural marketing, foreign trade, slaughterhouses, and others, frequently provide valuable sources. Such data should be known and utilized with skill.

Knowledge of agricultural processes and of their techniques of execution. A clear idea of the agricultural processes (e.g., preparation of the soil, sowing, weeding, harvesting) of each crop is necessary if the data produced by the agricultural statistics service is to be objective. These processes and procedures vary from country to country, and even within the same country, because of a series of physical, social, economic, and technical factors. The cultivation of corn, for example, is quite a different operation in a tropical country than it is in a temperate zone. In the temperate zone, where agricultural techniques are highly advanced, agricultural machinery is customarily used in all stages of the cultivation, the sowing and harvesting of the crop are limited to a few months, and the crop is produced primarily for commercial purposes. But in the tropical zone, where agricultural technology is underdeveloped, the use of agricultural machinery is usually very limited (hoe culture and fire agriculture predominate), the periods of sowing and harvesting continue throughout the year, the growing period varies according to the altitude where the crop is grown, and a large part of the production is destined for local and home consumption.

What are the crops, the agricultural processes of which should be well known? Undoubtedly attention should first be given to those crops to which the estimates and forecasts will refer, and later, to the rest. But a general knowledge of all the crops of the country (cultivated varieties, rotations, principal crop-growing regions and techniques used, periods of sowing and harvesting, etc,) would be of great help. The preparation of an agricultural work calendar for the different crops is essential. This will make it possible for the most desirable dates to be fixed upon which to collect the basic data, both when dealing with an individual crop and with a series of them. If what is wanted is an estimate of intentions to plant, the most appropriate time to make the survey is in advance of the sowing period; or, if it is the production obtained which is desired, the days immediately following the harvest are most advisable, since the farmers will have fresh in their memories the quantities harvested and the area where they were obtained. To investigate the area and production of a series of crops after a long time interval, will in the majority of cases result in appreciable errors of estimate, because of the inability of respondents to recall exact figures.

As in the case of crops, it is necessary to know the livestock practices, the purposes of this activity (for milk or meat production, or both, in the case of cattle, for example), and the zones where this activity is carried on. The combination of livestock and crop surveys makes this knowledge even more necessary.

Lists of farms and other lists. The availability of lists of farm administrators, agricultural enterprises, and farms is of great utility, and in many cases indispensable for carrying out agricultural statistics surveys where sampling techniques are used. A series of farms or enterprises cannot be chosen for enumeration if there is no complete list of them. These lists

can be prepared from different sources. The principal one is generally the agricultural census. State or county real estate registers may be a valuable aid. Producers' associations, certain dealers in agricultural products, and similar sources can also supply useful information for the preparation of special lists. Whether the lists of farmers are general or special, it is advisable that they be arranged according to specific geographic divisions, as small as possible. The special lists are useful when it is desired to limit the survey to one product or a limited number of products. These lists must continuously be revised because of consolidation or subdivision of farms and other causes.

Lists from agricultural cooperatives, banks, public and private officials engaged in agricultural work, and inspectors of different agricultural activities are also useful. Proper consultation with them and use of the statistical information which they may have available constitutes a valuable aid in concrete cases.

Demarcation of agricultural regions and land classification. Frequently, the political divisions may not coincide with the agricultural regions because of a series of special characteristics. Often it is the agricultural regions and not the political divisions to which the agriculture and livestock estimates are to refer, because it is believed that the data will be of greater economic significance.

Whether the estimates should or should not be made for the political divisions or for agricultural regions already demarcated or yet to be demarcated can be decided only in the light of each individual situation. Both possibilities have advantages and disadvantages. In the case of political divisions, for example, there is an advantage in that the public is already familiar with these divisions. This is not the case with agricultural regions, especially when these have only recently been created, and often have only temporary significance. The greater economic significance of estimates by agricultural regions, however, may compensate for this difficulty. It is always important that the data obtained be related to the statistics of transportation, of flow of products to the market, of weather, and of other basic series.

If estimates must be made by agricultural regions, it is necessary to have appropriate maps which show the clear demarcation of these regions and their principal characteristics. In order to make a good demarcation of these regions and preparation of the corresponding maps, the following elements are essential: Census data, general cartography of the country, land classification, aerial photographs, and a detailed knowledge of the topography, climate, and quality of soils. This material is also necessary in order to produce estimates for the political divisions. These elements will profoundly influence the way in which the work will later develop.

Establishment of adequate concepts and definitions. A series of concepts which are dealt with constantly in agricultural statistics should be clearly defined to avoid unnecessary mistakes. The most important of

these concepts are: Farm, agricultural operation, producer, proprietor, tenant, manager, caretaker, sharecropper, farmhand, enumeration segment, agricultural region, crop reporting district, crop year, and agricultural production. All these involve not only problems of a conceptual nature, but also influence procedures. There is evidence that the lack of precise interpretation of these concepts is due to inadequate and ambiguous definitions. The result is that statistical data produced on such bases lack accuracy. An appreciable number of these concepts have been clearly defined recently as a result of the work of the 1950 agricultural census programs. But in many cases there is room for important improvement which further experimentation and development may indicate and which above all will tend toward greater international comparability.

Factors of a cultural, economic, and social nature

The form of organization of agricultural activities. A whole series of economic and social factors also exercise great influence on the planning and development of an agricultural statistics system. Aside from a general knowledge of the principal characteristics of the economy as a whole probably one of the most important factors is that related to the organization of agriculture in the different countries. What system of exploitation predominates? Are the farms large or small, or perhaps medium-sized? The importance of this is obvious for the colection of statistical information. If in a country there existed only one farm which covered the entire territory, the problem would be very simple; the information could be obtained from a single source. But in a single country there are many farms, sometimes millions of them. Under such conditions the problem takes on a different light, becomes enormous. The task of soliciting data from many farmers may take on huge proportions. One must choose, then, the alternative of sampling, that is, of generalizing about the whole universe from the study of a relatively small number of cases.

The land tenancy system has much to do with the organization of agriculture; it is one of the determining factors of the size of the farm and the use made of the land. What types of tenancy predominate and what conditions make each type possible? Are there owner-producers, tenant-producers, or other types of producers?

What, as a result of the size of the farm and of other causes, is the degree of commercialization that the agricultural activity has attained? It is obvious that a system of current agricultural statistics is more necessary in a country where agriculture is practiced on a commercial scale than in one where the self-sufficient, family type farm is predominant.

Is there a cooperative agricultural production movement in the country? Do proportional profit farms or agrarian communities or units exist?

The economic, social, and cultural level of the agricultural producer: His attitude toward the collection of statistical information. By virtue of the agricultural organization of the country, what are the cultural, social, and economic conditions of the farming population? Is it an illiterate farming population, or is it one with a relatively well-developed cultural level? Are the people tolerant, or do they have various kinds of prejudices? What is the standard of living? All of this is important, because upon it depends the attitude of the respondents toward the collection of data on their economic activities. Conditions of poverty, ignorance, and suspicion make a barren field for gathering useful information. In some cases there will be resistance to supplying the data because of fear; in others, because the persons involved do not know what they are asked to give; still others will refuse to supply information because they do not see any use for ir.

The success of an agricultural statistics program depends to a large degree upon the favorable attitude toward the program on the part of those who report thè basic data. The existence of a population well informed on public affairs, free from prejudices, and ready to cooperate without reservations, would greatly facilitate a favorable attitude. If these conditions do not exist, it would be well to lend efforts towrd a large-scale educational campaign to illustrate to the farmers the advantages of the agriculture and livestock statistical program which is proposed to be initiated or improved.

WHAT MEASURES SHOULD BE TAKEN?

On the basis of the previous considerations, it is apparent that in general the following stages may be advisable in planning a nation-wide current agricultural statistics program, whether to improve the existing program or to start a new one.

a. Preparation of an inventory and a methodological analysis of existing data, and undertaking a concrete study of the statistical information the compilation of which should be initiated or improved, in view of the needs of the consumers of the data.

b. Objective evaluation of the facilities and services, availability of information and basic materials, and of other factors which might affect the initiation and development of an agricultural statistics program. For example: census data, cartography, information from subsidiary sources, knowledge of agricultural processes and their techniques of execution, lists of farms and other lists, demarcation of agricultural regions and land classification, adequate concepts and definitions, etc

c. Formulation of a progressive program for the establishment or improvement of an agricultural statistics system, bearing in mind the requirements discussed in this document and, wherever necessary, consulting specialized technicians from national or international agencies that offer technical assistance services in this branch of statistics.

d. Presentation of the plan to the competent government authorities, supporting it as far as possible with documentary evidence relative to the needs of both the national and the international organizations for the information.

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SOME SPECIFIC PROBLEMS IN COLLECTING AGRICULTURAL DATA*

By WALTER A. HENDRICKS, U.S.A.**

RESUMEN

Este artículo hace relación a los elementos de orden físico que deben considerarse en el establecimiento de un organismo eficiente encargado de la *recolección* de estadísticas agropecuarias. Se trata en él de la necesidad de disponer de personal entrenado y competente para llevar a cabo tareas específicas, y la necesidad de especialización por funciones dentro de la organización; la conveniencia de revisar continuamente los tipos de consumidores y de usos de los datos recolectados; y la importancia de Conferencias frecuentes entre representantes del organismo estadístico y otros organismos públicos y privados e individuos, a fin de mantener un programa adecuado, que goce del respeto del público y reciba su apoyo. Una de sus secciones está dedicada a los tipos de información detallada (principalmente listas, directorios, mapas y compilaciones afines) que deben mantenerse al día por las oficinas de estadística agropecuaria como instrumentos esenciales para el muestreo estadístico. Si bien no puede organizarse la oficina ideal de la noche a la mañana, se puede, sin embargo, desarrollar gradualmente un programa eficiente si se traza un plan y se logra cada año algún progreso.

Introduction

This paper is limited to a discussion of some points that need to be considered in planning a program for the *collection* of agricultural statistics. Nothing will be said about the uses made of the data for economic analyses and other types of computations, nor about the kind of organization required for such activities. This narrow viewpoint is adopted, not because the collection of agricultural statistics is an end in itself, but because it is important enough, and difficult enough, to be treated as a separate problem. Consumers of statistics sometimes have the mistaken belief that the collection of primary data is a simple task and that most of the heavy thinking revolves about the uses made of the data after they have been assembled. No one will deny the importance of putting data to work after they are collected; there would be no reason to collect data unless they were gathered for some purpose. But it must also be recognized that the collection of data is itself an exact science when it is done as it should be done. It is a highly specialized job and requires a competent staff which should be set up specifically for that purpose. Such a staff must be properly organized and supplied with the necessary equipment. It needs to devote all of its attention to the collection of primary data and should not be distracted from that function by any other duties.

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This specialization of function serves several purposes. First of all, the staff needs to concentrate on its job if that job is to be done well. In the second place, the staff needs to be protected from any suspicion that the data reported to it by any individual respondent will ever be used against that respondent. Data reported by individual respondents must be kept confidential and never disclosed to anyone; only totals and averages should be released or made available for inspection by individuals outside of the organization. This is important because respondents cannot be expected to supply accurate reports to a statistical agency unless they are assured that these individual reports will be kept confidential. One way providing such assurance is to keep the statistics-collecting agency entirely independent of agencies that make use of the statistics; this provides concrete evidence of good faith which the respondents can recognize readily. There is still another reason for separating the collecting agency from agencies that use the data. It protects the collecting agency from pressures that sometimes arise to bias estimates or reports for the benefit of interested organizations or individuals. Such bias might take the form of publication of false or misleading data, suppression of data, or premature release of information to favored agencies who could profit from such special treatment.

It is by no means certain that failure to separate the collecting agency from agencies that use the data would automatically result in such undesirable practices, nor that a separation would be certain to prevent them. But experience has shown that much of the temptation to bias reports is removed when the collecting agency is independent of all agencies that could conceivably exert such pressures.

The subject matter of the statistics

Although the agency that collects statistics should be completely independent of all agencies that use the data, the latter should play a prominent role in deciding what data are to be gathered. The collecting agency is a service organization which exists solely for the purpose of supplying the users of statistics with the data they require. The nature of the data to be collected must obviously be determined by the agencies that are to use the information, rather than by the collecting agency.

Deciding what data are needed, and in what form they are needed, is a matter of policy in which many public and private agencies have a direct interest. It is not our purpose here to discuss the subject-matter content of a statistical program for any particular country; requirements vary from place to place and from time to time. It would be impossible to make any recommendations about the subject matter to be included in the program without knowing what particular purposes the program is intended to serve. But a few words can be said about some general principles that should be borne in mind in planning the content of a proposed program. The first step must obviously be an appraisal of the needs for

statistical data. In this connection it is important that every suggestion for collecting data on some subject be accompanied by a statement of why the data are needed and how they are to be used. Nothing is easier than to get suggestions from innumerable sources about collecting data that would be "of interest" or "of great value." But when such suggestions are examined in detail, it is often found that many of the people asking for data on a particular subject have not the slightest idea of how they would use those data if they were collected. Furthermore, requests for data are generally so numerous that no agency could be expected to include all of them in the program.

The requests for data must be carefully screened so that the program finally adopted covers the most essential needs in orderly fashion. The content of the program should be kept under continuing review so that changes can be made as need arises. The statistical program must be sensitive to changes in requirements for data; obsolete series should be discontinued rather than being retained out of habit, and new material that will satisfy some current needs should be added.

In deciding what subject matter should be included, it is necessary to take inventory of the government's needs for information in planning its regulatory, tax, and welfare programs, but the needs of private individuals for data that will enable them to conduct their business more efficiently must also be given serious consideration. A government statistical agency is supported by tax money; if it is to survive in a democratic country, it must be of service to the general public in many direct ways, as well as indirectly through its services to other government agencies. The public needs to be convinced that it is getting some benefit from the program that it is supporting with its money. If the public has the impression that the program exists mostly for the benefit of "the bureaucrats," popular interest and support cannot be expected. Frequent conferences between representatives of the statistical agency and other public and private agencies and individuals are important from the standpoint of maintaining a sound program that merits and receives popular support.

The statistical staff

The successful operation of a data-collecting program depends upon a staff that is trained to do its job. In a large organization the work can be departmentalized so that the various tasks can be delegated to workers who are specialists in their particular fields. In a small organization the same individuals must function in more than one capacity and perform creditably in all of them. In this paper the tasks that need to be performed and the qualifications that must be met by the people who do them are considered. No attempt will be made to discuss the problem in terms of numbers of people; it should be understood that the same individual may in some agencies do the work that is delegated to several specialists in other larger organizations.

First of all, a statistical agency, like any other organization, should be directed by an able administrator. It is his responsibility to maintain contacts with other agencies, make specific recommendations to higher government officials on such matters as the scope and subject matter content of the program, recruit personnel for his agency, exercise general supervision over their work, and assume responsibility for all business affairs and technical activities of the agency. He should be an individual who has a great deal of familiarity with the subject matter covered by the program. He should be adept at public relations work, should have a good general knowledge of the technical operations of his agency so he can recruit staff members with the necessary training, and should have the qualities of leadership that make for a smoothly functioning organization.

The staff should include at least one individual who is familiar with the mathematical principles of sample design and analysis. This is a highly specialized field, but the science of data collection today requires a person with these qualifications to devise methods of collecting all the data required under the program. Modern principles of sampling enable the required degree of accuracy to be obtained at minimum cost; but these principles can be put to work only by someone who is familiar with both the mathematical and the practical aspects of the problem. Unless such a person is on the staff, much time may be wasted with inefficient sample designs and faulty methods of estimating.

A person familiar with questionnaire design and the factors that affect errors in reported data should also be present. Such an individual should be familiar with the psychology of the respondents contacted in surveys and be acquainted with as many as possible of the various factors that can cause inaccurate data to be reported in certain circumstances. He should be able to devise objective checks and measurements that can be used to estimate the size of reporting errors and eliminate them from the final results.

The staff should include an operations man whose duties revolve about the mechanics of collecting the data after all the plans have been made and the instructions issued. His services are required particularly when data are collected by direct interview or by objective measurement, but there is also plenty of work for him to do when data are collected by mail. It is his job to see that all materials are ready at the time they are needed, to schedule each step in the operations according to a planned time table so there will be no confusion or delays, to train all field workers in their duties and to supervise them closely enough to insure that the field work is done efficiently and accurately.

The clerical force in the office should be under the supervision of a competent head clerk who has the responsibility for supervising the processing of the data, according to plans developed by the professional staff, and for maintaining an orderly file of records. A well trained head clerk

is a key employee in any office and should be given the recognition he or she deserves. By supervising the detailed work of the clerical staff, such an individual takes a tremendous load off the shoulders of the professional workers, which permits them to spend more time at the jobs they are supposed to do.

The matter of maintaining an orderly file of records cannot be stressed tood strongly. The file should be kept in such condition that a complete history of any past survey, and all activities associated with it, can be found with a minimum of searching. Nothing is more aggravating than to try to find out why and how a particular survey was conducted several years previously, when the records are in a state of confusion. Correspondence relating to the reasons for the survey may be scattered in a number of different places; a description of the sample design may be hard to find, and no record may be available to indicate why the sample was designed in that way; the work sheets showing the steps in the computations may not be properly labeled so that it is impossible to get a clear picture of how the data were processed or how the results appearing on the summary sheets were computed. When the office work is under the supervision of a good head clerk, such situations can be avoided. A record is preserved of every step in the planning of a survey and filed systematically. All work sheets are labeled so that the sources of the data are clearly indicated, and all computations are recorded in such a way that every step can be retraced at any time without effort or misunderstandings. The computations should be recorded on standard forms whenever possible; when they are of such a nature that a standard form cannot be used conveniently, they should be recorded in systematic fashion on a work sheet specially ruled by hand for the purpose, and all entries should be clearly labeled. These forms should be retained as a permanent record and filed in such a way that they can be found at any time without effort.

The clerical force under the direction of the head clerk should consist of people who have a liking for figures and considerable facility with arithmetic and in the use of computing machines. They should write a neat hand and be able to record figures quickly and neatly.

When data are collected by the interview method, a corps of interviewers must be available. Best results may be expected when a permanent corps of such workers is on the staff; recruiting a new field force whenever a survey is to be made is not efficient for various reasons. Such workers should have pleasant personalities so that they create favorable impressions in their contacts with respondents. They should be familiar with the subject matter of the survey so they can talk intelligently with the respondents about their operations; if the respondents feel that the interviewers know little about the subjects covered by the questionnaire, they will not be as cooperative as they would be if they felt that the interviewers knew what they were doing. The interviewers must be people who are not overly sensitive, because they will meet with some rebuffs;

they must be able to take such things in their stride without impairment of their morale. They must be scrupulous in following instructions to avoid bias in the replies elicited from respondents, and to avoid errors that would be introduced by failure to follow the design of the sample. This means that they must have the capacity for remembering and paying attention to a number of small details.

Statistical aids to sampling

A considerable background of information is extremely helpful in conducting the current operations of a statistical organization. Such information consists of descriptive data about the universes to be covered by the various surveys, which can be used to design samples efficiently. The amount and accuracy of such available information varies widely from one country to another. The kind of information we are talking about here refers to such things as lists of names and addresses of all farmers in the universe from which a sample of individual farms could be selected; a list of names and addresses of business firms from which a sample of such firms might be selected; a good set of detailed maps that can be used to apply area sampling as an alternative to list sampling; and statistical data associated with individual units or geographic areas that can be used to stratify a universe, to allocate a sample more efficiently, or to make more accurate estimates from sample data through the use of ratio estimators and similar devices.

Lists of farms and business establishments, and statistical data associated with them, are often available from past complete censuses or from directories of producers or processors of special commodities maintained by farmers' associations, trade groups, tax or licensing agencies, and similar sources. Statistical data for small geographic areas are sometimes available from the same or similar sources. The statistical agency should assemble a file of such pertinent information and maintain it in such a form that it is convenient for current use. In some cases it would be desirable to have it recorded on punched cards, if the necessary equipment is available. When that is done, samples can be drawn rapidly according to many different kinds of specifications; samples of livestock farms, fruit farms or other special samples, can be drawn rapidly from a master list of all farms. Samples of small geographic areas containing specified kinds or numbers of farms can also be picked out rapidly when the basic descriptive data are on punched cards.

In some countries many of these aids to sampling are already available; in others it may be necessary to start from the beginning. To decide what is necessary, we need only examine the kinds of samples that the statistical agency needs to draw. It is impossible to draw a sample of names from a list without having a list. A master list of names and addresses is a minimum requirement when such a sample is desired. If no such list is available, one must be secured by taking a census of some

kind. But sampling blindly from a general list is not efficient when a sample is drawn for the purpose of estimating some item that is associated with only a fraction of all names on the list; such a sample would yield too many "blanks." For that reason it is desirable to have the list of names set up in such a way that the kind of enterprise associated with each name is indicated. When that is done the list can be regarded as a composite of a number of sub-universes, each of which can be sampled separately as occasion arises. This concept of a number of sub-universes is also useful when a general sample is to be drawn; the sampling process can be controlled so that each sub-universe is forced to be sampled at its proper rate, rather than having that left to chance. It is helpful to record the description of the enterprise associated with each name on the list in quantitative terms. This serves several purposes. Such data can be used to predict sampling errors for proposed surveys, because data obtained in current surveys tend to be fairly similar to historic data for the same individuals with respect to variability between individuals. Historic data can also serve as controls for stratifying the universe into groups of individuals according to size of operation; this is important because samples are more efficient when individuals are allocated to samples on the basis of their scale of operations rather than being selected with equal probabilities.

Everything that has been said here about the use of historic data in connection with lists of names and addresses applies with equal force to geographic areas delineated on maps. Geographic regions are used as strata in many sample designs, and small geographic areas are often used as sampling units. In addition to having detailed maps of a country, it is useful to have as much detailed statistical information as possible for both small and large geographic areas shown on those maps. The ultimate ideal, of course, would be to have detailed data on hand for areas sufficiently small to serve as suitable sampling units in practical work, and to have such data available for all of those units in the universe. To establish the necessary records, census data must be tabulated separately for small geographic areas, instead of by fairly large political subdivisions as is customary. When small geographic areas are used as sampling units, such data could be used in the same way as data for individual farms or firms in list sampling. When such an extensive file of records cannot be assembled, we have to be satisfied with less. A device that has some possibilities is to draw a fairly large sample of small segments of area from a map and to list census data separately for those selected segments when a census is taken. Those segments could constitute a "master sample" from which smaller samples could be selected for special purposes later. The historic data could be used for making such selections and for computing estimates from current survey data. The use of the historic information would result in samples that are more efficient than would otherwise be the case and would permit more precise estimating procedures to be invoked.

Conclusion

The above discussion gives some idea of the physical requirements that should be met in setting up an efficient statistics-collecting agency. A deliberate effort has been made to stress general principles rather than to set down rigid rules. It should be recognized that we are thinking in terms of an ideal that may not be achieved perfectly in practice, but it is desirable to have an ideal in mind when we start to build an organization, even though we may finally have to be content with less. The perfect statistical agency still remains to be built, so there is no reason to be unduly discouraged if all of the goals outlined above cannot be attained at the beginning of a statistical program. A sound program usually evolves gradually rather than being created suddenly; anyone trying to establish a new program can hardly hope to have everything at hand that he would like to have. But if he has some pattern in mind, he can gradually work toward those goals, and there is reason to believe that they can be attained some day.

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AGRICULTURAL STATISTICS WITHIN THE FRAMEWORK OF NATIONAL STATISTICS*

RESUMEN

Este artículo trata sobre algunos de los aspectos prácticos que deben considerarse para ajustar las estadísticas agropecuarias (y los organismos que las producen) dentro del sistema nacional de estadística. Se presentan las ventajas y desventajas de los dos tipos generales de sistema—el centralizado y el descentralizado. Se dan como consideraciones básicas para determinar la mejor manera de efectuar la integración de las estadísticas agropecuarias dentro del marco general de las estadísticas nacionales, las siguientes: Importancia de la agricultura en la economía; tamaño del país; grado de centralización existente en la estructura gubernativa del país en general, y en el sistema estadístico en particular; extensión, clase y localización de las facilidades disponibles (tales como servicio de recolección en el campo, equipo de tabulación, servicios de imprenta); tipo de coordinación existente y en perspectva.

Ya sea el sistema administrativo de las estadísticas agropecuarias centralizado o descentralizado, debe guardarse íntima relación y coordinación entre las agencias y organizaciones, tanto públicas como privadas, que tienen que ver con estas estadísticas, ya como productoras o como consumidoras de ellas. Se hace énfasis en la necesidad de centralizar en un solo organismo la responsabilidad por la coordinación general y la calidad de las estadísticas.

This document does not aim to consider the theoretical or technical aspects of a national framework of statistics, but only to study practical aspects which may be employed by any country in its endeavors to organize its agricultural statistics as an integral part of the over-all national statistics. It endeavors to point out some of the decisions that should be made and the problems that should be resolved in order to determine the appropriate role of agricultural statistics in relation to other classes of statistics.

A field of information as important as that of agricultural statistics justifies an outstanding place and function in any national government program. Proof of this is the fact that in some countries agricultural information was collected even before a national department of agriculture had been organized.

In view of their importance, the utmost care should be taken to see that the agricultural statistics not only serve their purposes well but also fit correctly into the general system of statistics of the country. This correct fitting will make them more useful, in the long run, for the purpose for which originally intended.

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Position of agriculture in the national economy

The importance of agriculture with respect to the rest of the economy will differ from country to country. In like manner the relationship of the agricultural statistics to the remainder of the country's statistics will differ. This relative importance is what determines to a great extent the pattern of statistical needs and, in consequence, the services and facilities which are necessary in order to satisfy those needs. To determine the structure and conditions necessary to achieve effective national agricultural statistics, definite objectives and problems must be known and outlined. These are discussed in the paper "Basic Considerations for the Establishment or Improvement of a Current Agricultural Statistics Service."

The development of agriculture within the country's economy leads to the establishment of various kinds of public and private organizations which need, for their effective performance, large masses of data relating to agriculture. If agriculture has a large relative importance in the economy, and if it is diversified, there will be many organizations operating in the field of agriculture. Some of these organizations will a be of a regulatory nature (such as price-fixing agencies), others may be developmental in character (such as agricultural credit banks), some will do research work (such as experiment stations), and others will be trade groups (such as growers' associations) which promote the farmers' interests. Some of the agencies will probably not be agricultural at all, but will have some relation to agricultural production (such as a health and nutrition agency), or will have to deal with the agricultural population (such as a social security scheme).

All these agencies and organizations will in one way or another need statistical information on agricultural matters for their administrative decisions, or else will produce statistical data as a by-product of their operations. In any event, all the agencies having an interest in agriculture should participate in the designing of a statistical program to insure coordinated effort and output.

Again, there are other types of agencies which produce statistics which are very useful for the successful operation of agricultural enterprises, such as those relating to weather and climatic conditions, to transportation facilities, to prices and to labor supply. Such agencies must also be taken into consideration when planning the agricultural statistics program and the structure for carrying it out.

Not only the kinds of agencies must be taken into account. The spheres in which they function and the relations existing between them will also determine to a large extent the kind of system that should be set up. Probably most of these agencies, will be under the department of agriculture, or under a different department, in the executive branch of the national government. But some will be independent government establishments, and others will belong to the regional or local subdivisions of the country. And still others will be semiofficial or private.

The statistical system

In order for agricultural statistics to be really useful, they must be coordinated and give a complete picture of the country's agriculture. This means that the statistics which are produced by the agency in charge of crop estimates, the statistics relating to agricultural prices, the data on farm employment, the statistics relating to cattle slaughter, those on farm credit, etc., must all be linked into a cohesive network. And, the agencies which produce these agricultural or related statistics must work under the same plan.

But this is not enough. They must also be related to and coordinated with other kinds of statistics produced in the country. To do this it is necessary to consider the type of statistical system which the country has.

In a general sense, there are two basic types of organization of a statistical system, *centralized* and *decentralized*.

In the first type, there is a central statistical agency responsible for the production of all or nearly all the statistics of the government. That agency compiles the information from the available sources, processes it, and makes the final data available for the use of the government agencies which will base their administrative decisions on such information. The statistical agency must have a clear understanding of the needs of these agencies in order to produce the statistics which they require.

In a decentralized system, on the other hand, the production of statistics will, on the whole, be in the hands of the individual agencies, each of which will produce the statistics which it needs for its own operating requirements. Obviously, if there are no relations between these various agencies, there will most likely be duplication of work, the statistics will follow different definitions, some of the results will be inconsistent, and the accuracy and reliability of the data will vary greatly. If these deficiencies are to be overcome, the various agricultural agencies must reach agreement on which will produce each kind of statistics, and how these statistics will be obtained.

Thus, in both the centralized and the decentralized system there is need for statistical coordination. But the kind of coordination which is needed is quite different. In the centralized system, the emphasis of the coordinating effort must be placed on securing the desired understanding between the central producer of statistics and the peripheral agencies which will use those statistics. It can be said that this type of coordination is between producers and consumers of statistics. In the decentralized system, the emphasis of the coordination must rather be oriented toward reaching an agreement among the various producers of statistics (who are probably also consumers) as to the division of work among themselves.

Following is a discussion of the conditions and problems which will in all likelihood confront agricultural statistics under each of the two systems.

A. *Centralized system*. On the assumption that the country has a centralized statistical system, it is presumed that the agricultural statistics, like most others, are produced by the central statistical agency. This agency functions like an industrial establishment designed to produce as efficiently as possible its product—statistical information for the government and for the country at large. But its product is not homogeneous—it produces information of many different kinds in various subject matter fields. One of these fields is agriculture.

The first question that presents itself is: Can the central statistical agency get all the agricultural information which is needed? The second important question is: How does it ascertain what information is needed? Finally, there is the question of the soundness and efficiency of the production of the statistics.

As to obtaining the information needed, there are two ways in which to procure it: (a) By making the deliberate effort of going out into the field and collecting the data; (b) as a result of the operations of agencies which work in the field of agriculture.

In regard to collection in the field, it is presumed that the central statistical agency has developed a system for collecting information. It has its own regional or local offices or representatives, resorts to the services of local officials of other agencies, or relies on the reports sent in by correspondents. The central statistical agency, being involved in the production of many kinds of statistics, probably uses its collecting services for gathering various types of information. This gives the agency a good opportunity, if it has sufficient funds for this purpose, to develop over the years an efficient collection force. The same personnel, or at any rate the key personnel, will be used for taking censuses, for making other types of general enumerative surveys, and for making sampling surveys of various kinds.

This specialized knowledge in the techniques of data collection is a great advantage that the central statistical agency has.

The second way in which agricultural data may originate is through the activities which different operating agencies carry on in various aspects of agriculture. These agencies sometimes are required by law to collect the information necessary for the performance of their programs, and at other times accumulate data as by-products of their operations. In the case of a centralized system, the central agency would have to make arrangements with the operating agencies to get the data from them and process them into a form suitable for statistical analysis. Later, it would have to turn the final results back to the operating agencies for their use, and make them available to the general public. In order for this mechanism to work effectively, the central agency must work in close coordination with the agencies in charge of the agricultural programs, to be sure that the statistics it is producing are those needed by the agencies, and that they are produced in the appropriate form and at the appropriate time.

If this problem can be resolved successfully, and a system of consultation is worked out whereby the central agency will be receptive to the statistical needs of the operating agencies, then it will be advantageous to have the agricultural statistical services in the central statistical agency, which will act as a service bureau for the agricultural agencies of the government in the same manner as for other government agencies.

In the production phase, the central statistical agency has other advantages over the agricultural agencies: It specializes in statistical production and has all the techniques and facilities needed for working efficiently, and it can integrate agricultural statistics with other kinds of statistics, making them comparable through the use of common classifications, definitions and techniques. It may have, furthermore, staff specialized in research on the improvement of statistical procedures.

B. *Decentralized system.* Let us look now at the workings of agricultural statistics in a decentralized statistical system. It is assumed in this case that the agricultural statistics will be produced by the agencies in charge of operating agricultural programs, mainly by the national department of agriculture and by other specialized agencies in this or related fields, as has been mentioned above (in like manner, other statistics will be produced by government agencies engaged in the respective fields). Each one of these agencies produces the specialized statistical data to fill its own needs. In other words, the production of statistics is under many agencies, which are not specialized in statistics, but rather in their respective subject-matter fields.

With respect to the collection of information, that which is directly collected in the field can be obtained by the field agents of the department of agriculture. Although this personnel may not be specialized in collection techniques, it has the particular advantage of being in close contact with the farmers, and is thus better able to secure reliable information from them. This is very important, because of the well-known fact that agricultural information is one of the most difficult kinds to collect, in view of the great number of sources which are disseminated throughout the country, sometimes in rather out-of-the-way places.

With regard to statistics derived as a by-product of administration, the decentralized system also offers advantages, since the data originate in, and are processed by, the same agencies which will use them.

For this reason, the second aspect, that of ascertaining the needs of the statistical consumers, is likely to be resolved more easily in the case of decentralization, since the producer and consumer of the statistics are, in general, the same agency. For the final analysis of the data, it is necessary to know not only statistics but also agriculture.

But when we look at the third aspect of the problem, the production process, it would appear that the decentralized agricultural agencies are not as well suited as the central statistical agency, to process their statistics efficiently and at low cost. This is so because these agencies have as

their primary responsibility the administration and carrying out of specific operating programs, not the production of statistics. This leads to more complex administrative problems in the over-all functioning of the agencies and to their having less facilities and equipment for the efficient processing of statistical data.

Besides, these agencies are not in as good a position as the central agency to coordinate their various agricultural statistics with other kinds of statistics produced in the government, and there is thus more likelihood that the data will lack comparability and show inconsistencies, arising out of the use of different classifications, definitions, and techniques. This may be especially serious when the current statistics are in the hands of the operating agricultural agencies, and the periodic agricultural census is under a statistical agency specialized in census techniques, which has developed its own structure especially designed for census enumeration. In this case there might occur serious divergence between current and census agricultural data, which would be detrimental to their usefulness. (This problem is discussed more extensively in the article "Vinculación de los Censos Agropecuarios...," published elsewhere in this issue of the Journal.)

Summary of considerations providing a basis for decision

1. *Position of agriculture in the economy.* If the nature of the country's agriculture is such that it covers a large segment of the economy and is very much diversified, it is possible that any different types of agencies have been developed over the years in the field of agriculture, each one of which has access to some kind of statistical information. If this is the case, probably a decentralized agricultural statistical system is better. On the other hand, if the agriculture is concentrated on the production of a few important crops, it may be easier to place all responsibility for agricultural statistics in the central statistical agency.

2. *Size of the country.* In a small country it is obviously easier to centralize the agricultural statistics in the central statistical agency, since it will be easier for it to keep in close contact with the various agricultural agencies, and because such a central agency is probably the only one which is able to command an adequate number of statistical technicians and the proper equipment, both of which are too expensive for the agricultural agencies to maintain. But in a large country, there are probably more advantages in favor of decentralization, since the various agricultural agencies will be large enough to be able to maintain the necessary equipment for statistical work and the necessary technical force specialized in statistics. At the same time, a central statistical agency designed to produce all statistics in a large country would have to be an extensive administrative unit, which would surely run into more complicated administrative problems than would be the case in a small country.

3. *Degree of centralization*. If the present statistical system of the country (and in general its governmental structure) leans more toward centralization than toward decentralization, then it would seem more advisable to centralize agricultural statistics also, for the central statistical office would already have evolved techniques for collecting and processing various kinds of statistical data effectively. However, if the prevalent organization of the statistical services is one of decentralization and its operations are considered satisfactory, then it probably would be better to keep agricultural statistics under the agricultural agencies, rather than to initiate a change in the statistical system in order to centralize the production of agricultural statistics.

4. *Facilities available*. This relates to the previous point, since the kind of structure prevalent in the statistical system will have determined to a large extent which facilities (such as field collecting service, tabulating equipment, printing services) are in the hands of which agencies, and this will, of course, be a very important factor to consider when deciding who should be responsible for agricultural statistics.

5. *Type of coordination*. The methods of coordination of the various statistical series which may have been evolved in the country in satisfactory form should also be taken into consideration when deciding the place of agricultural statistics within the statistical system as a whole. If the central coordinating agency has established good working agreements with agricultural agencies for the production of some of their statistics, it will be better to continue along that road and gradually centralize only new agricultural statistics. But if this is not so, and if on the other hand there exist good relations between the various agricultural agencies which permit them to come to agreement on the adoption of uniform methods, then it will be better to keep the production of agricultural statistics decentralized and in the hands of these agencies.

Whatever decision is made in the end as to the most suitable place and manner for producing agricultural statistics, the condition must always be satisfied that there be close interrelation and coordination of such statistics, and that there be one agency responsible for their over-all coordination and for reliability. Moreover, in any system it should also be completely clear to the government officials, and to the public generally, where they should go when they need any type of statistical information on agriculture. For, in the last analysis, the effectiveness of the statistics depends on their use, and the use is very closely tied to the ready access that people can have to the data.

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PLANNING AND OPERATING SAMPLE SURVEYS*

By Emerson M. Brooks, U.S.A.**

RESUMEN

El primer requisito que debe llenarse para realizar con éxito cualquier investigación por muestreo es el de su planeamiento cuidadoso, práctico y bien fundamentado. Las deliberaciones sobre la urgencia de disponer de planes preliminares y el bosquejo de los mismos pueden generalmente ser adelantados con mayor beneficio por intermedio de un comité integrado por representantes de todos los organismos interesados y que incluye técnicos en muestreo, especialistas en la materia a ser investigada, expertos en la ejecución de invetsigaciones, y funcionarios de la oficina del presupuesto. Este artículo trata sobre los siguientes puntos que deben considerarse, y sobre los cuales deben tomarse decisiones cuando se planea una investigación por muestreo: (1) Quién desea la información; (2) qué es lo que se desea; (3) cuándo se necesita; (4) qué áreas deben ser incluidas en la investigación; (5) por qué se desean los datos; (6) de quién van a obtenerse los datos; (7) cómo pueden obtenerse; (8) cómo, dónde y cuándo van a ser elaborados los resultados; (9) quién va a hacer el análisis; (10) cuánto dinero hay o habrá disponible para la investigación. En cuanto hace referencia al método de recolectar la información, el autor considera solamente las investigaciones por muestreo, contemplando la posibilidad de emplear una sola o una combinación de las siguientes alternativas: (a) Observaciones subjetivas; (b) investigaciones por correo; (c) investigaciones por enumeración directa; (d) mediciones objetivas; (e) recuentos de campos objetivos. En el documento se dan listas ilustrativas de los aspectos que deben considerarse en cada tópico.

The greatest problem facing the world now and in the long future is how to balance production and distribution of foodstuffs with popoulation growth. To accomplish this balance will require the combined, cooperative, and strenuous efforts of farmers, plant and livestock breeders, soil, water, and timber specialists, marketing and transportation experts, banking and credit authorities, government and private officials, an enlightened public, and the blessings of a bountiful nature.

The part that the statistician has in this momentous struggle is to help provide factual information concerning the agricultural economy which is sufficiently reliable to permit intelligent decisions to be made and effective programs to be planned and carried forward. Individual contributions may be of little or no significance, but the importance of serviceably accurate statistics in the determinations of today and in planning for the future can hardly be overemphasized. The meeting in Canada,[1]

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[1] Refers to the II Session of the Committee on Improvement of National Statistics, held in Ottawa, Canada, September 29 — October 10, 1952.

which has one of the world's best agricultural statistical services, attended by representatives from all countries of the hemisphere, is evidence that the importance of statistics is widely recognized and that steps are being taken to improve them. Such a meeting would hardly have been proposed 10 years ago and, if held, would probably have been poorly attended. The world has moved a long way in the past decade and the science of statistics has kept apace.

* * *

Perhaps no phase of statistical science has progressed more in recent years than that having to do with the planning and operation of sample surveys. Those whose recollections of statistical work goes back 15 or 20 years are greatly encouraged by the increasing emphasis being given to the practical aspects of planning and operating sample surveys. The development of statistical theory and analytical methods had to come first, but a corollary growth in operational procedures could not be permitted to linger far behind.

If the results of a survey are to be of maximum value, every phase of the survey must be carefully planned and faithfully executed. Let us make no mistake about it—careful, practical, and intelligent planning is the first requisite for success of any sample survey.

Once the proposal for a sample survey has reached the stage for serious consideration, the usual procedure is to appoint a committee to consider the matter and to draft tentative plans. This committee should consist of representatives of all interested agencies and include sampling technicians, subject-matter specialists, experts in survey operations, and budget officials. The chairman should be a high-level administrator who is familiar with the subject-matter field, especially in its broad aspects, the relationships of the various agencies involved, and the functioning of the operational organization which will have responsibility for carrying out the field work. The appointment of subcommittees or individuals to study, and be responsible for, specific phases of the survey is standard practice once agreement has been reached on the general outlines of the project.

The committee must consider and make decisions concerning these questions:

1. Who wants the information?
2. What is wanted?
3. When is it needed?
4. Where, that is, what areas are to be in the survey?
5. Why are the data wanted?
6. From whom is the information to be obtained?
7. How can it be obtained?
8. When, where, and how are the returns to be processed?
9. Who is to make the analysis?
10. How much money is, or will be, available for the survey?

These are serious questions and should be considered further.

1. Who?

The answer as to who wants the survey made will help determine:

a. The attention the projects will receive. If sponsored at higher administrative levels, all concerned will probably give more serious attention to the proposal than if it originates at lower levels or outside the administrative setup.

b. The speed with which it will probably move. Some agencies require a long, slow process of clearance at various administrative levels, thus slowing down action.

c. The regulations under which the work will be done—the type of people that can be employed, their salaries, duration of employment, working conditions, communication and other facilities, etc. Also the regulations may be such that respondents may be compelled by law to reply.

d. The number of agencies involved. The more agencies there are participating, the more complex will be the problem of coordination and liaison. The survey operator has the difficult task of keeping everybody informed concerning the project and maintaining happy relations among all of them.

2. What is wanted?

Determining exactly what is wanted is usually quite difficult. The original draft of the proposed subject matter will almost certainly be incomplete in some respects and too extensive in others. Usually more topics have been proposed than can reasonably be included in the survey because of cost, time or operational difficulties. The committee must determine a priority of need by topics and decide which can be included in the survey. To aid in making these decisions, the sponsor of each topic should submit a statement:

a. Explaining the need for the proposed data: Who will use it and how; its value to the assumed users of the data; urgency of need, etc.

b. Indicating how frequently it will be needed: One time only, annually, monthly, etc.

c. Stating when during the year is the best time to obtain the information, e.g., at the end of the calendar year, right after harvest, at census dates, etc.

d. Including detailed questions to be asked.

e. Including detailed tabulation plans.

The committee must, of course, limit the project to something that can be accomplished. It is far better to be firm at the start rather than allow the survey to become so burdened with topics or with subject matter which cannot be obtained satisfactorily, that little or no useful

results can be secured from the survey. The agency financing the survey will expect value received for its money and it is up to the committee, and especially the person in charge of field operations, to be sure that goal is achieved.

3. When?

The date the survey will be made depends on such factors as:

a. Amount of time needed to prepare for the survey. Careful preparation requires a great deal of time.

b. Urgency of need—how soon *must* the data be available?

c. When the authorization for funds expires.

d. Weather conditions. If possible, periods of heavy snow or rain or excessive heat should be avoided. Surveys at such times not only are harder to make, take longer and cost more, but more farms are missed because interviewers (or the postman) either cannot get to them or will not make the effort to do so.

e. Relationship to previous surveys or census. Are the data to be obtained the same or similar to those previously collected? If so, it is usually desirable to make the new survey at a comparable date.

f. Work load of staff. Most offices have periods when they are unusually busy; if possible, these should be avoided in making a survey.

g. Conflicts with other surveys. Perhaps there is a survey or a census already planned for a specific date which would make it undesirable to have interviewers from different agencies in the field at the same time.

h. Availability of respondents. The people to be contacted may not be in the area to be surveyed during certain periods, as they may have gone to a more pleasant climate or on vacations or perhaps they follow a regular migration pattern; or they may be too busy with their own work to cooperate willingly with the interviewers.

i. Seasonal variations in availability of information. Some types of information can be obtained best at specific dates or during certain periods. For example, annual income of farmers for the preceding year can probably best be obtained soon after January 1; wage rates for picking cotton can best be obtained during or very soon after the picking season; production of crops like wheat, rice, tobacco, etc., should be collected as soon after harvest as possible.

j. Conflicts with holidays, elections, religious observances, etc. In planning a survey, the calendar should be studied for special events and occasions during which it would be undesirable to be making a survey.

4. Where?

A survey may be made for one or or more towns, communities, counties, parts of a State, States, group of States, or for an entire nation. In considering where the survey is to be made, the planners must review carefully.

a. The facilities available, such as maps and aerial photographs.

b. Operational difficulties such as topography, roads, communications, educational level of local people, and their reaction to the survey, distances involved, and language barriers.

c. Number of respondents required. A minimum number of returns are needed to give statistical stability regardless of the size of the area survey. Therefore, if estimates are to be made for various geographical levels, the number of reports must be increased accordingly.

d. Importance of proposed area to objectives of the survey. For example, a proposed survey of part-time hired workers in a region that has very few such workers would be of doubtful value. Sometimes specific areas can be omitted from the universe to be sampled because they are not of sufficient significance.

e. Political considerations. Occasionally good reasons exist for avoiding certain areas because the attitude or temper of local people is such that the survey might be poorly received or unfavorable consequences result.

5. *Why is the information wanted?*

Any government agency is responsible to some legislative body; therefore, it must justify the work it does and the money it spends. The reasons why the survey is to be made, including the reasons for the when, where, and how must be carefully considered so that they can be presented in convincing fashion. If the sponsor of a proposed survey, or of subject matter to be included, cannot do this, then the proposal should be turned down. The reasons "why" will also be needed in obtaining cooperation of respondents, supervisors, and administrators. A short story published in local newspapers explaining why an interview survey is being made helps gain the confidence of the community and makes the work of the interviewer easier. In mailed inquiries, a brief explanation of the purpose of the survey and the need for the information will help increase response.

6. *From whom is the information to be obtained?*

In planning a survey, perhaps the four most important questions concerning the prospective respondents are: (a) Do they have the information? (b) Can they give it to you? (c) Will they give it to you? (d) Are they interested in the subject? A word or two more should be said about each of these questions.

a. Do they have the information? This cannot always be assumed. To illustrate, it might be presumed that farmers know where their cattle are sent for slaughter but actually very few would know this, as usually they sell to local buyers who dispose of them in various ways, and to many places.

b. Can they give the information to you? Sometimes legal restrictions prevent respondents giving the desired information. Language barriers must be overcome and the problem of illiteracy must resolved. Most farmers in any country keep very poor records of their operations and frequently can give only guesses instead of reliable information.

c. Will they give the information? Most people cooperate willingly, and this is especially true of farmers; but there is a general reluctance to give information of a highly personal nature. Income data are always difficult to obtain accurately, and delicate questions pertaining to the respondents' health can be handled only by skilled professional interviewers. Any questions dealing with matters that may be of interest to tax collectors and law enforcement officers always raise doubts and suspicions in the minds of respondents. Then, of course, women throughout the world never like to reveal their age.

d. Are the respondents interested in the subject? One of the most helpful factors in making a survey is to obtain information that is of vital concern to the respondent. If the subject of the survey is one in which the respondents have a genuine personal interest they will do all they can to be helpful. For example, if a severe storm is believed to have caused great death losses among cattle, the farmers in the afflicted area will give wholehearted cooperation in a survey intended to estimate the extent of the loss.

7. *How is the information to be obtained?*

Several alternative methods and combinations of them are possibilities that must be considered. Basically there are two ways to obtain information, that is, by asking or by observing. The asking may be done by written communication, i.e., by mail or telegraph, or by interviews in person or by telephone. Observing may be subjective or by objective measurement. There is also the question as to whether all eligibles are to be contacted or only a part. This paper is concerned only with sample surveys and the choice of method lies between one or a combination of these: (a) Subjective observations; (b) mailed inquiry; (c) interview survey; (d) objective measurements; (e) objective field counts.

a. Subjective observations. Traveling around a countryside observing crop conditions is of value in obtaining a first-hand appraisal of the situation and to supplement statistical data obtained by other means, but is no substitute for factual information. Such subjective appraisals are not sample surveys in the sense used here and are mentioned only to clarify the record. However, careful planning will improve subjective appraisals; that is, the trips should be repeated at comparable periods, in the same areas, over identical routes.

b. Mailed inquiries. Problems of planning and operating mailed inquiry surveys are not within the scope of this paper, but a word or two concerning them seems appropriate. There seems to be a general

tendency to adopt a defeatist attitude toward the use of mailed inquiries in some countries because of a high illiteracy rate among farmers and the lack of a widespread and efficient rural mail service. In any country, however, there is an educated segment of the population such as agricultural marketing and transportation officials, experiment station workers, large farm operators, school teachers and the like that can be utilized to provide useful information concerning the agricultural economy in accordance with a timetable which fits the realities of the situation. The planning committee should carefully consider the possibility of obtaining data from at least a portion of the sample by mail.

c. Interview surveys. Interview surveys, in which a sample of the universe is contacted and information is obtained by asking specific questions, have been used frequently in recent years in a great many countries. Their usefulness stems from the fact that, when properly handled, they: (1) Obtain types of information that cannot be gotten satisfactorily by mail, (2) obtain information from people who either cannot or will not respond to a mailed inquiry, and (3) provide independent estimates from a single survey without the need of a historical series for reference.

Before deciding that a sample interview survey is the method to use, consideration must be given to the facts that the cost is relatively high and that obtaining satisfactory data depends not only on a willingness of respondents to cooperate but their ability to give reasonably accurate replies. Further, an interview survey requires skilled sampling statisticians and subject-matter specialists, a number of competent and conscientious interviewers, trained supervisors, adequate transportation and communication facilities, and suitable maps of the survey area. Also required are a staff and equipment to process and analyze the results.

If these facilities are not adequate, the planning committee should seriously consider postponing the proposed survey until the facilities can be developed to a satisfactory degree, or at least limiting the project to manageable proportions.

The steps in a sample interview are:

1. Determination of subject matter to be included.
2. Design and drawing of the sample.
3. Preparation of timetable of operations.
4. Design and construction of the questionnaire.
5. Pretest of schedule and procedures in the field.
6. Preparation of instructions to interviewers.
7. Reproduction of questionnaires, instructions, operational forms, etc.
8. Distribution of material to field.
9. Training supervisors.
10. Locating and hiring interviewers.
11. Training interviewers.
12. Interviewing, including supervision of interviewers.
13. Editing and coding questionnaires.
14. Tabulation and summarization of data.
15. Analysis of data (including record of operations).
16. Publication of results.

The most difficult of these tasks to accomplish is to obtain the right type of people for interviewers and to train them to do their work well. Desirable characteristics of interviewers include intellectual honesty, mature judgment, knowledge of local practices, energy, good education, good penmanship, interest in the project, willingness to work long hours and endure hardships, and ability to work well with people.

The training should be a combination of explanation, demonstration, and practice. The interviewer should "learn by doing" rather than simply listening to an instructor. If time and money permit, 24 hours of training given four hours per day for six days is much preferred to three 8-hour sessions. Close supervision throughout the survey will greatly enhance the quality of work done.

d. Objective measurements. If the purpose of the survey is to obtain information on yields per acre of one or a few crops, the method used might well be a so-called objective measurement survey. The usual procedure is to draw a sample of fields of the crop and have trained people visit these fields, scientifically select areas of a specified size within each sample field, and harvest the crop growing within the area.

An objective measurement survey is relatively slow and expensive and requires extreme precision and scrupulously honest performance in all phases of the operation. In planning and carrying forward an objective measurement survey, particular attention must be given to:

1. Maturity of the crop, so that the survey will be made close to the start of harvest.
2. Drawing a precise sample of fields.
3. Selection and training of personnel.
4. Close supervision of work during survey.
5. Securing cooperation of operators of fields included in survey.
6. Making careful analysis of data collected.

e. Objective field counts. Much valuable information can often be obtained quickly and at low cost by simply making counts of specified items along an established route.

A "record" of the counts can be made by simply dropping a bean in a box if a mechanical counter with push buttons is not available. Field counts can be made while traveling by train, automobile, horseback or on foot. If changes from one time to another are to be compared, it is essential that the same route be followed and traveled in the same direction.

8. When, where, and how are returns to be processed?

Processing involves editing, coding, tabulating, summarizing, and analyzing returns. Detailed and precise instructions must be prepared for each of these operations. Processing of questionnaires begins with editing in the field where errors and omissions can be corrected quickly. This should be followed by a more complete review or editing in a State office and later again in a central office.

Tabulation may be by hand or machine. If by hand, the tabulation sheets should be reviewed to eliminate or verify unusual entries and to catch clerical errors. If machine tabulation is to be utilized, the questionnaires must be coded following, or as a part of, the final editing. The summary sheets should also be carefully reviewed. The decision as to whether "hand" or "machine" tabulation is to be used (assuming equipment and trained operators are available for the latter) depends on the size of the clerical staff, number of returns, number and complexity of questions, and the intricacy of the tabulation and analysis.

9. Who is to make the analysis?

The analysis is made by subject-matter specialists, but it is essential that they work closely with the sampling statisticians to avoid faulty or erroneous use of survey indications. If two or more agencies are cooperating in a survey, the question as to who participates in the analyses should be agreed upon in writing specifying definite assignments and responsibilities.

10. How much money is available for the survey?

Perhaps the subject of money should have been discussed first, as obviously the amount of funds available will determine what, if anything, can be done, the size and quality of the staff, the size of the sample, the amount of training that can be given, and many other aspects of the project.

The total cost of a survey includes salaries of regular members of the staff assigned to work on it, as well as expenditures which are incurred only because the survey is being made. As special funds are required for the incurred costs, careful estimates must be made of the amount needed. This means that a detailed listing of each anticipated item of incurred cost should be prepared and estimates made of each expenditure. An example of items for which estimates of incurred costs would be needed for a proposed sample interview survey is as follows:

a. Sample: Salaries and materials.
b. Pretest: Transportation, per diem, clerical salaries.
c. Reproduction of materials: Questionnaires, instructions, special forms, final report.
d. Training supervisors: Transportation, per diem, rental of conference rooms.
e. Finding and hiring interviewers: Transportation, per diem, communication (telephone, telegrams, postage).
f. Training interviewers: Transportation, per diem, rental of conference rooms, communication.
g. Pre-survey supervision: Transportation, per diem, salary of interviewers.
h. Interviewing: Transportation, per diem, salaries of interviewers, communication.
i. Processing questionnaires: Clerical salaries, machine rental, communication.
j. Other costs: Special equipment purchased or rented, repairs.

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SAMPLING METHODS FOR AGRICULTURAL ESTIMATING AND FORECASTING AND ELEMENTS TO BE CONSIDERED IN THEIR ADOPTION*

RESUMEN

Aun cuando describe los métodos generales por medio de los cuales se recolectan datos estadísticos de carácter agropecuario—censos, investigaciones por muestreo, utilización de subproductos de programas estadísticos administrativos—este artículo considera, particularmente, los varios tipos de muestreo comúnmente usados en la realización de estimaciones y pronósticos agropecuarios.

Los tipos de muestreo descritos en detalle son los de investigación por correo, por enumeración directa y por mediciones objetivas. Se anotan las ventajas y desventajas de cada tipo, los diseños alternativos de muestreo más comunes a cada uno, la determinación y selección de las unidades de muestreo en el caso del muestreo probabilístico, el control o reducción de los errores de muestreo y de los errores no atribuibles al proceso de muestreo, y en general, los factores que afectan la selección del tipo de muestreo más adecuado en cada caso. La aplicación feliz de uno u otro tipo depende de la calidad y suficiencia de elementos e informaciones básicos de que disponga la entidad que los ponga en práctica.

General Methods for Collecting Agricultural Data

The collection of agricultural data from farmers, from handlers and processors of farm products, or from the various firms and agencies doing business with farmers, is a large undertaking. This paper is limited to a discussion of the methods by which such data are obtained, but it must be realized that the successful application of these methods requires the existence of an organization that is in a position to put them into practice.[1] Furthermore, the data which are collected should constitute a well-planned body of information that best serves the needs of the government and the citizens of the country.[2] Data are ordinarily collected through a census, by a sample survey, or as by-products of miscellaneous government and business activities.

Censuses

A census is historically the oldest instrument designed specifically for the purpose of collecting data. As is well known, it consists of contacting every individual, who by definition is a unit of the universe, and asking him to supply the pertinent data that apply to him and his

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[1] For treatment of this subject, see the paper "Basic Considerations for the Establishment or Improvement of a Current Agricultural Statistics System," published elsewhere in this issue.

[2] See the paper "Objectives and Scope of an Agricultural Statistics System," published elsewhere in this issue.

operations. As every unit in the universe is contacted, the computation of totals and averages for the universe as a whole usually is a laborious, time-consuming, and expensive task, but it presents no difficulties from the viewpoint of statistical theory.

Sample surveys

A sample survey differs from a census in that only a fraction of the universe is contacted for information; from that fraction estimates are made of totals and averages for the entire universe. The idea of sampling undoubtedly occurred early among census technicians by observing that when data from a census were only partially tabulated the totals estimated from them were not much different from those obtained later when all the data were tabulated. This observation soon led to the conclusion that sample surveys could replace censuses; indeed, some individuals seriously questioned whether the expense of a census was in many cases justified. In the light of present knowledge it can be said that both censuses and sample surveys are useful tools. A census is particularly useful when very little background information about the structure of the universe is already available. Under such conditions a sample survey could still be devised to yield fairly accurate results. But the lack of data which are needed to put efficient controls on the sampling process would ordinarily mean that sampling errors could be kept within reasonable limits only by making the sample so large that the sample survey might be just as expensive as a complete census. A census is also the most practicable method when data are needed for small geographic areas, small political subdivisions, or for other small categories. Here again samples yielding acceptable accuracy would need to be so large that a complete census might be just as economical.

By-products of administrative programs

Data that are obtained as by-products in the administration of actvities conducted by government and private agencies often form a valuable body of statistics. Although the data were originally not collected for that purpose, they often fill needs that would otherwise have to be satisfied by censuses or sample surveys specifically designed to assemble such data. Data from these sources may be comparable in some cases to census data when every unit in the universe under consideration is covered, or they may be comparable to sample-survey data when only a portion of the universe is covered. From the viewpoint of the statistical office, the most desirable feature of such data is that they are available to the office at little or no expense. Files and records may need to be searched at various places, and the particular data desired may need to be transcribed, but that usually does not involve much expense. In some cases such data are already published by the agencies which did the original work and are available at no additional cost.

However, such data are not always what they purport to be. Even when they are ostensibly equivalent to a census, they must, for several reasons, be appraised with caution. First of all, it should be remembered that the data were compiled by agencies whose main concern was administering some program and whose interest in the data as statistics may have been negligible. Furthermore, such agencies are not always skilled in collecting data nor in making accurate compilations, even when they are interested in doing so. It is not uncommon to find that the data were obtained and compiled carelessly, with errors accumulating at every step in the process. In the second place, data reported by respondents to representatives of an agency who use such data in programs that affect the respondent are often subject to bias. The respondent may misrepresent the facts deliberately when he feels that it is to his advantage to do so. A third difficulty should be mentioned. When data are available for only a fraction of the universe which the statistician has in mind, that fraction may not be a representative sample of the universe. It is not uncommon to find that the agency which collected the data was interested in a universe defined somewhat differently from the one visualized by the statistician. To make the data conform to the statistician's viewpoint, some adjustments may need to be made. Whether or not this is possible depends very largely on the presence or absence of information that can be used for that purpose. But despite the the weaknesses that may be present in some data collected as by-products, the fact remains that such data often provide a veritable mine of information that is available to the statistician for the asking; he will do well to take inventory of what is already available from such sources before planning a large-scale survey of his own.

AGRICULTURAL ESTIMATES — SAMPLE SURVEYS

Mail surveys

Mail surveys are an inexpensive method of collecting data that may be recommended under appropriate conditions. The first condition, of course, is that some means exist whereby the questionnaires can be placed in the hands of the respondents. There must be a list of names and addresses to which the questionnaires can be mailed, or some other scheme must be devised by which the questionnaires can be distributed. A second condition is that a sufficiently large and representative number of questionnaires be filled out by the respondents and mailed back to the statistical office. This requires more than the existence of an adequate postal service and some literacy on the part of the respondent—it requires a willingness on the part of the respondents to cooperate. We shall concentrate our attention on this last point. To gain a respondent's cooperation the questionnaire must deal with a subject in which he has some personal interest; he will not bother with anything that seems foreign to his own operations. It is important that a questionnaire sent to him be accompanied by an explanation of why the request is made

and how he will benefit by supplying the information. The questionnaire should be short; a long and apparently complicated form will discourage a respondent from even starting to fill it out. Various devices can be used to stimulate a respondent's interest in reporting, but the personal touch is the most effective. Occasional personal visits by representatives of the statistical office to the people who receive mailed questionnaires have a remarkable effect upon willingness to report. When time permits, repeated requests will also cause a large increase in returns. It is quite common to find that a second request will bring in more returns than the original mailing.

The fact that many persons who receive mailed questionnaires fail to fill them out and return them has in the past led to a belief among some agricultural statisticians in the United States that it was a waste of time to strive for a mailing list which is a representative sample of the universe to be covered. It was felt that selectivity in the returns would nullify any efforts in that direction; consequently, many mailing lists were constructed mainly with a view to having them contain names of people willing to cooperate. That viewpoint has changed considerably in recent years, but has not been completely dispelled to this day. It persists with particular tenacity wherever the statistical office is interested in maintaining a permanent corps of reporters to report periodically on such items as crop conditions. A respondent's willingness to report and his knowledge of conditions in his community are certainly as important, if not more so, than whether he was chosen at random or whether he and all his fellows are a representative sample of all farmers in the universe. But in many cases samples for mail surveys are now selected with as much care as for surveys conducted by any other method. Even then, measures need to be taken to eliminate biases caused by selectivity and consistent errors in reporters' replies. Historical data, showing the relationships between sample indications and the corresponding true values in past surveys, are often necessary to arrive at estimates that are free from the effects of biases in the sample data. This is usually done by plotting the true values for past years against the sample indication on a chart and fitting a regression line by various methods. A current sample indication is translated into an estimate by reading the chart or by computing the estimate arithmetically from the equation of the line.

Sampling and non-sampling errors. Now let us consider sources of error in estimates derived from mail surveys and what can be done to keep them as small as possible. Errors are more likely to arise in some methods of collecting data than in others. These errors may be of various types, and it is usually desirable to choose a method that will reduce the probability of occurrence of as many errors as possible. First of all there are errors caused by failure of the mailing list to be perfectly representative of the universe. If the mailing list is a probability sample of all addresses in the universe, such an error is a random error. If the mailing list is

not a probability sample, the error is not a random error and is much more difficult to measure; it is no longer in the realm of what is customarily called "sampling error." But, no matter how the list was selected, failure of some individuals to return completed questionnaires usually introduces errors of another kind—the questionnaires that are returned come from the more cooperative respondents and data relating to their operations may not be typical of the operations of the average individual in the mailing list. Errors from this source may be quite large because willingness to cooperate is frequently associated with sizes of the items on which data are requested. In the past agricultural statisticians in the United States believed that such errors could be reduced by asking respondents to report data typical of averages in their communities, rather than data on their own operations alone. But this has not been too successful because respondents often are not sufficiently well informed about operations other than their own; errors in their opinions are just as troublesome as the errors that those opinions are supposed to eliminate. At present the trend is toward confining requests for data to the respondent's own operations.

Another device for dealing with errors caused by non-response is to prepare charts showing the relationship between the averages of reported data and the "true" averages or totals for past years. Under the assumption that the relationship remains constant, this provides a tool for translating a current sample indication into an unbiased estimate. Of course this means that "true" data must be available for comparison with sample indications in previous years. Such data usually come from periodic censuses or as by-products of various government and business activities. It should be noted that this method automatically adjusts for bias in the mailing list as well as for selectivity in response, when the same list is used every year.

A further device for reducing error is to tabulate data from the mailed returns by strata, which may be geographic areas, political subdivisions, or arbitrary classes defined by "control" data which are correlated with the items to be estimated and which are also known for every individual in both the sample and the universe. The reported data in each stratum can then be weighted to adjust for disproportionate representation of reports falling into the various strata. Another adaptation of the same principle is to compute the relationship between reported data and the control data for the individual respondents. This relationship is used to compute an adjusted average for the items to be estimated by correcting for the disparity between the sample and universe averages of the control item. Simple ratios and linear regression equations are usually adequate for the purpose.

All of these devices are useful but the risk of error caused by non-response is not completely eliminated by any of them. When enough money is available, and when the importance of the data justifies an appreciable expenditure to avoid that risk, a sample of the non-respondents to the mail survey should be visited to get the data. Only by this

method can the statistician be *sure* that he is making the proper adjustment for non-response. Such interviews are costly in comparison with the cost of mailing a questionnaire, but the total cost is not excessive when it is remembered that only a sample of the non-respondents needs to be visited. The number that need to be visited is governed by the rate of return to the mail survey and the degree of precision desired. By taking the estimated percentage mail return and the per-unit costs into account, it is possible to specify the size of both the mailed sample and the interviewed sample before the first mailing is made; the work can then be planned so that the mail and interview portions of the work will be properly balanced to give the desired precision at the lowest possible cost. Of course, it must be remembered that all of this is predicated on having the original mailing list chosen in such a way that it is a probability sample of the universe; otherwise there would still be the risk of error introduced by possible selectivity in the original sample itself.

Interview surveys

Surveys may also be conducted entirely by the interview method. This is the recommended procedure when the questionnaire is such that a small percentage return would be obtained by mail, or when the data desired are such that rather careful explanations must be made to the respondent to insure that the questions will not be misunderstood. A poor return by mail can be anticipated when the subject matter of the survey is of little interest to the respondents, when the questionnaire is long and complicated, and when considerable thought or record searching is required of the respondent before he can answer the questions. The interview method must also replace mail surveys when dealing with respondents who are illiterate, even though there is nothing particularly complicated about the questionnaire and the answers to the questions require little thought.

Advantages and disadvantages. It would appear that the interview method has a distinct advantage over the mail approach by eliminating most of the non-response problem. This is one of the reasons why that method is recommended. But in practice some non-response of another type is encountered. More shall be said about this later. For the present it can be said that the interview method *does* give more control over the response than voluntary reporting by mail. In addition, the replies to questions should be more accurate because the interviewer has an opportunity to give detailed explanations of what is wanted and can also point out inconsistencies in the replies when they arise so the respondent can correct them. The main disadvantage of interview surveys is their greater cost, of which travel is a large component. For this reason samples must be designed differently from mail surveys if the desired accuracy is to be attained at minimum cost.

Common sample designs. The designs ordinarily used for interview surveys are of the multistage type; briefly, this is nothing more than arranging the sample so that a number of respondents are contacted at each location to which the interviewer has to travel, instead of having individual respondents widely dispersed as would be the case if they were selected individually by a random or systematic process. This clustering of respondents can obviously be arranged in a number of different ways; the problem of sample design usually reduces to nothing more than choosing the particular scheme that is most advantageous under a given set of conditions. The principle is quite simple. In sampling farms, for example, one may find that a larger total number of farms needs to be included in the sample to yield a desired degree of accuracy when those farms are clustered into groups than when they are not so clustered. But the time and travel required to visit the farms in the clustered sample may be less than for the smaller, more dispersed, sample. Hence, it is less expensive to use the larger sample of farms.

The clustering scheme that is best for a given survey is obviously the one that achieves the greatest reduction in costs while still maintaining the desired level of precision. The loss of precision associated with clustering is caused by the fact that neighboring farms tend to be more nearly alike, with respect to most characteristics, than farms that are more widely separated from one another. In general, the same is true of other sampling units. For that reason a sample of dispersed units is usually a better cross section of the universe than is an equal number of clustered units. The loss of precision encountered by clustering clearly depends upon the relative sizes of the differences between clusters and within clusters, with respect to the item we are trying to estimate. If the differences *between* clusters account for most of the total variability, those differences are the largest component of the sampling error associated with a clustered sample, and the loss of precision introduced by the clustering will be fairly large. For that reason a good sample must be designed to eliminate the effects of differences between clusters insofar as possible; otherwise the number of clusters in the sample would have to be too large for economical sampling.

When background data are available, various devices can be used to achieve this goal. One device is the simple process of stratification. When the kind of clustering to be used is decided, all such clusters in the universe are put into strata defined in such a way that the differences between clusters are small *within strata*. As within-stratum variability is the only variability that contributes to the sampling error, the effects of differences between clusters have been eliminated. Another device, somewhat analogous to stratification, is to select the sample clusters with probabilities that are highly correlated with the size of the item to be estimated in each cluster. This is approximately equivalent to stratifying clusters on the basis of control data and drawing a stratified

sample. Sometimes it is possible to define clusters in such a way that most of the total variability in the universe is within clusters. By that process the differences between clusters are automatically made small.

Up to this point the word "cluster" has been used rather loosely. Statisticians customarily reserve this designation for sample designs in which every unit within the selected clusters is included in the sample. But sometimes every unit in each cluster is not included in the sample; only a sample of units is selected for visiting within every selected cluster. When that is done the cluster is called a *primary* or *first-stage* sampling unit, and the units within clusters are called *second-stage* units. In such designs variability within first-stage units, as well as between first-stage units, contributes to the sampling error. Such designs are ordinarily used when the first-stage units are quite large. One problem that arises in designing samples is determining the optimum sampling rates to be applied in the selection of first-stage units and the selection of second-stage units within first-stage units. Here again costs must be considered as well as the relative variability between and within first-stage units. One usually finds that including additional first-stage units in a sample is much more expensive than increasing the sampling rates within those units. Suffice it to say that statistical methods are available for computing all sampling rates in such a way that they are in optimum balance in a given situation.

The process of clustering can obviously be carried to any degree: Large clusters can be subdivided into smaller clusters, and these in turn can be subdivided into still smaller clusters. Whether clusters at any stage are to be included in the sample in their entirety, or whether only a sample of units is to be taken at any stage, is a decision that can be made as the result of clear-cut statistical computations.

Choice and selection of sampling units. The delineation of clusters in a universe is governed by a number of mathematical and operational considerations. Clusters must obviously be defined in such a way that their boundaries (literal or figurative) are identifiable. When they are defined in terms of geographic areas or political subdivisions of a country, it is important that those areas or political subdivisions be of the kind for which background data are available without a prohibitive amount of retabulating being required. When background data are already tabulated for individual units of one kind, it is more desirable to use those units than to define units on some other basis which would require expensive retabulations to be made. Sometimes, as has already been indicated, it is desirable to delineate first-stage units in such a way that most of the variability in the universe is *within* those units. This can be done in more than one way. One device is to use geographic areas or combinations of minor political subdivisions that cut across different type-of-farming areas, for example, so that each unit contains farms of a number of different kinds. Another device is simply to make the units so large that each one tends to be quite heterogeneous in its constitution.

Of course, when that is done it is desirable to use some refinements in sampling within such units; otherwise the within-unit variability will lead to large sampling errors. This can be done by stratifying within first-stage units; in Puerto Rico [3] and Costa Rica, [4] for example, rather large political subdivisions (*barrios* in Puerto Rico and census segments in Costa Rica) were used as first-stage units, with samples of farms drawn from each such unit. But before drawing the sample of farms from each selected *barrio* in Puerto Rico, all farms in the *barrio* were classified into strata on the basis of size of farm. A stratified sample was then drawn, with heavier sampling rates being applied to the strata containing the larger farms.

The selection of sampling units to be included in the sample is not always an easy task. First-stage units can be drawn rather easily because a list of such units, together with descriptive data on each, is usually available. In most cases those units have been delineated on maps with an identifying number attached to each. The selection can easily be made at randon with the help of a table of random numbers, or by a systematic procedure, preferably with a randon start, that imposes a uniform spacing between units over the universe. Sampling within such units is sometimes difficult because there may not be much background data about those small subunits. When there is a list of such units available, sampling can be done at random or systematically. When there is background data for each subunit it is also possible to stratify or impose other controls on the sampling process. When there is no advance information about those units, one is faced with the problem of devising a method by which the sample is to be selected. Sometimes it is desirable to take a preliminary census in each selected first-stage unit to obtain a list of the subunits, and some background data about each, that can be used to select a sample as was done in Puerto Rico. Sometimes it is possible to devise some rules for the interviewers to follow so that a representative sample of subunits will be selected by the interviewers themselves. For example, a sample of roads could be selected from a map and the interviewers instructed to stop at every tenth dwelling along a specified side of each selected road. Such devices are not as desirable as drawing the complete sample in the central office. Some interviewers may bias the sample by failing to follow the rules; departures from instructions are less likely to occur when the units to be contacted are specified in advance.

Area sampling is a device for selecting samples of subunits when little advanced information is available about them. Instead of trying to develop a list of such units or to devise a rule for selecting a sample of

[3] See "Estadísticas Agrícolas en Puerto Rico," IASI doc. 1221Sp.

[4] See "Informe sobre los Trabajos Efectuados para la Estructuración de las Estadísticas Agrícolas Continuas en Costa Rica, 1951," IASI doc. 1217 Sp.

individual units, a map of the region to be surveyed is divided into a number of small segments and a sample of such segments is selected, usually randomly or systematically with equal probabilities. All subunits of the kind desired that are found in those sample segments constitute the sample of subunits. Theoretically this approach simplifies the sampling problem tremendously because the sample of segments can be drawn in the central office and the interviewer is given no choice in the selection of the people he is to contact.

Sampling and non-sampling errors. Some sources of errors in interview surveys will now be considered. Just as in any sampling problems, a "sampling error" appears which is random in character and which may be charged to the fact that not every unit in the universe is in the sample. It was stated earlier that even in interview surveys there was some non-response, althought it was of a different nature than that encountered with mail surveys. Some respondents refuse to answer questions, but the percentage that refuse is usually so small as to be negligible. The most serious cause of non-response is failure of some respondents to be at home when the interviewer calls. This might not appear to be serious because, in theory, the interviewer could return as often as necessary to make his contact. But it should be remembered that each such visit is quite expensive and a large number of call-backs is needed to get close to 100 percent coverage. Consider the following situation which is quite realistic. Suppose there is a sample of 1,000 respondents to contact, and on the first visit only 700 are found at home. Visiting the remaining 300 a second time, no more than 70 percent of those 300 will likely be contacted. Assuming that each time only 70 percent of the respondents are found at home, the following picture emerges:

Call	*Number of visits*	*Number of contacts*
1	1,000	700
2	300	210
3	90	63
Total	1,390	973

In other words, to get 973 interviews from 1,000 potential respondents it was necessary to make 1,390 visits, which would make costs about 39 percent higher than if no call-backs had been necessary. Even so, there would still be an incompleteness of 2.7 percent. In practice, the situation is usually still worse because the percentage of contacts resulting from successive visits generally decreases instead of remaining constant. It is easy to see that a high degree of completeness can be attained only at considerable expense. Various methods are used for dealing with this problem, but it can hardly be said that they are completely satisfactory. One method is to select a *sample* of individuals who were not at home on the first visit and to revisit those as often as necessary. Another

method is to make adjustments for incompleteness as in the case of mail surveys. Fortunately, bias caused by incompleteness is ordinarily not as great as in mail surveys for most agricultural items.

It should also be noted that errors in reported data are not necessarily eliminated when data are reported to an interviewer rather than on a mailed questionnaire. Insofar as an interviewer can detect misunderstandings and inconsistencies, and correct them through conversations with the respondent, some improvement may be expected. But if the respondent does not know the correct answers, data obtained by interview are no better than those reported by mail. There is also the danger that the interviewer may sometimes bias the results by suggesting answers to the respondent when the respondent appears in doubt about a reply; when that happens the data reflect the interviewer's opinions instead of the respondent's. Such errors are particularly apt to occur when the interviewer is in a hurry to complete his job and does not give the respondents time to think.

So far as sampling errors are concerned, the use of background data in the design of the sample provides an effective control. Such data can be used to stratify the universe, to set sampling rates in such a way that the heaviest concentration of the sample occurs where it is needed most, to permit the definition of sampling units in such a way that differences between them can be kept at a minimum, and to provide a basis for ratio and regression estimates of high precision. In recent years sample designs have also been developed to minimize and measure non-sampling errors. Errors in response, and errors chargeable to poor interviewing technique, can be measured by such devices as reinterviewing samples of respondents to a survey or by distributing interviewers over the universe in such a way that the data obtained by each interviewers separately are actually a separate sample of the universe. The first approach provides a measure of the range of error caused by respondents' uncertainty about the correct answer. The second permits a comparison of results obtained by different interviewers; that information can be used both to detect incompetent interviewers or to get a measure of the effects of differences that are normally present between interviewers. Controls of the first kind are particularly important when surveys are conducted on respondents who are unlikely to supply accurate data because of lack of education or because their operations are rather primitive and no records of those operations are maintained. Controls of the second kind are useful when the interviewers themselves are of rather poor caliber and their ability or willingness to follow instructions is questionable.

Objective measurements

Surveys based on the objective-measurement principle are similar to interview surveys in that the sampling units are visited. But instead of asking respondents to supply data about their operations, those data are

obtained by direct measurement or observation at the time of the visit. This method is needed when respondents do not know the answers or when there is reason to believe that their answers are deliberate misstatements.

Objective sampling for crop yields. Objective sampling to estimate crop yields is one of the oldest forms of this kind of survey. Portions of selected fields in an area are harvested when the crop is mature, the amount of produce in the harvested samples is weighted, and the estimated yield per acre is computed. There is nothing new about such surveys, but it is only during the past 25 years that they have been organized scientifically. Much of the early work was done in India and the idea of using probability samples of fields, and locations within fields at which the samples of the crop were taken, originated there. So did the idea of harvesting very small segments of a crop within the selected fields. Originally the selection of sample fields was made on the basis of the sampler's judgment; he was supposed to chose "representative" fields. After the fields were selected, a rather large unit of area was harvested in each selected field. The advantages of probability sampling, and harvesting small units of area in selected fields, have since been demonstrated in many countries. A word of caution should be offered with respect to the use of small harvested units. It is extremely important that those units be taken at locations specified by a rigid rule so that personal judgment is *completely* eliminated. Otherwise workers tend to take samples where the crop is better than average and bias the results. In formulating such rules it is more important to provide for the elimination of judgment than to insist on randomness; one practical procedure seems to be to specify a path across the field, such as a diagonal, on which the samples are to be taken and to take samples at specified systematic intervals. There is sometimes a tendency to harvest too much around the edges of the selected units; with small units this error is relatively more pronounced than with large units. It is also important that some of the sampled fields be revisited later, when the entire fields are harvested by the farmers, to weigh the entire crop from each of those fields. This provides a measure of the combined effects of possible biases in the small samples, of normal harvesting losses that occur under farmers' method of harvesting, and of deterioration that the crop may have suffered between the date of the original sampling and the date on which the crop was harvested by the farmer. One of the weaknesses of objective yield estimates that have been made in the United States is that such comparisons are lacking. Surveys in Germany show that the small samples alone tend to overestimate yields of small grains by about 10 to 12 percent, and yields of potatoes by about 12 percent.

Sampling procedures for selecting the sample fields can sometimes be devised as for interview surveys. A sample of farms is selected as for an interview survey and then one or more fields on each selected farm is chosen by some rule. It is often desirable to use a multi-stage design,

which permits groups of farms to be sampled at every part of the country to which the sampler has to travel. In some countries rural villages serve as convenient first-stage units; in other countries small geographic areas delineated on maps might be used. In the wheat-growing areas of the United States a route-sampling procedure has been most convenient. The samplers drive along a network of roads traversing the entire region and measure the frontages of wheat fields along those roads with an instrument known as a *crop meter* attached to the speedometer cable of the automobile. Whenever a specified interval of wheat frontage has been accumulated, the samplers stop, proceed into the field at a randomly specified number of paces, and take a sample. This is a practical method that also has an interesting theoretical advantage. The probability relationships are such that the acreage of wheat in every part of the region traversed is sampled in proportion to the acreage.

The problem of maintaining proportionality between areas of individual fields and the numbers of small samples taken is not always an easy one to solve. If fields are selected with equal probabilities, each selected field should be sampled in proportion to its area. But if fields are selected with probabilities proportional to their sizes, the same number of samples should be taken from each selected field. Either scheme is often difficult to put into practice; usually it is satisfactory that proportionality be maintained only by rather large regions without attempting to do so, field by field. As the correlation between size of field and yield per acre for that field is ordinarily quite low, no serious biases may result. But it is naturally better to avoid the possibility of bias when that can be done by a workable procedure. One device that was used in corn surveys in the United States was to contact all farms in a sample of small area segments. Each farmer was asked to report his corn acreage and a cumulative total was recorded for all farms contacted. A small sampling unit was harvested every time 10 acres of corn had been accumulated. This automatically selected the farms on which samples were to be taken. When a farm was selected, the corn acreage for this farm was accumulated field by field to select the field or fields from which the samples were to be taken. It is easy to see that farms and fields for which the corn acreage ranged from 1 to 10 acres were selected with probabilities proportional to corn acreage. Farms and fields having 10 or more acres were certain to be selected and thus came into the sample with equal probabilities. But by taking a sample for each 10 acres of corn, proportionality was maintained throughout. Selected farms and fields having from 1 to 10 acres were allotted one sample each; those having more than 10 acres were sampled in proportion to the acreages.

Objective sampling for crop acreages. Objective measures of crop acreages are more cumbersome to put into practice than measures of crop yields. During the depression, when acreage controls were placed on some crops in the United States, a program of measurements was started to

check compliance with the regulations. This was not done for statistical purposes, but it provided an objective check on reported statistics. Such measurements are expensive, whether the fields are measured on the ground or whether the work is done by planimetering aerial photographs. Some work of this kind has been done on an experimental basis for statistical purposes alone. Samples of areas were selected from aerial photographs, field workers visited the areas covered and identified the crops grown the individual fields shown on the photographs, and the acreage devoted to each crop was measured with a planimeter.

A scheme that is used in India is based on the same principle. Maps of agricultural regions around villages are divided into squares and a sample of those squares is selected. Sampling teams visit each selected square and estimate the fraction of each devoted to the crop. Although these are judgment estimates, they seem to be accurate because an observer examines only small unit at a time. Detailed maps are needed to permit exact identification of the selected square units in the field. A few years ago a modification of this idea was tried in the Western zones of Germany. Groups of neighboring fields, as shown on the maps of the cultivated areas around villages, were selected and visited, and the crops grown on each field were identified. As the maps showed the areas of the individual fields, it was possible to compute an estimate of the total land devoted to each crop.

The crop meter has been used in the United States to measure acreages of crops in regions where routes can be laid out to traverse the regions properly. The total frontage of a crop on the route is proportional to the area occupied by that crop in the region traversed. By using the same routes year after year, accurate estimates can be made of year-to-year changes in individual crop acreages.

Combination of judgment and objective methods. Objective measures are often useful in conjunction with judgment estimates obtained either by mail or by interview. Instead of having final estimates based on the measurements alone, judgment estimates are obtained for a very large sample, as well as objective measurements on a subsample of the entire sample. The subsample thus provides the correction factor that needs to be applied to the judgment estimates from the entire sample to make them comparable with objective measurements. This is an exceedingly useful device because smaller samples are needed for objective measurements by this method than when they are used alone. The objective acreage data in Western Germany were used in this way in conjunction with data from the land-use census. Results obtained objectively from a sample of villages were paired with census reports for the same villages. The ratio of objective estimates to census totals for the sample villages was applied to the census data for all villages. The same idea can easily be applied to adjust crop reporters' judgment estimates of yields.

CROP AND LIVESTOCK FORECASTS

By *forecasts* are meant short-time predictions of crop yields or livestock numbers, rather than predictions that extent far into the future. Long-time predictions are in the nature of trend projections; short-time predictions are based on current observations that bear a rather close relationship to the final outcome. For example, the yield of a crop is estimated from the appearance of the plants early in the growing season, or the number of pigs to be born is estimated from the number of sows farmers say they intend to have bred. This is clearly a different problem from predicting long-time trends.

Some of the most useful surveys are the so-called "intentions" surveys in which farmers are asked for data on such items as the acreages they intend to plant to various crops, the number of sows they intend to have bred, or the dates at which they intend to market their products. It is important to remember that one big purpose of publishing estimates of intentions is to give individual farmers a chance to change their intentions after seeing what is in prospect. This fact alone may make the final outcome different from what the "intentions" survey indicated. This raises an interesting question: Should the statistical office publish estimates of what all farmers intend at the time of the survey, or should it publish estimates of what the final outcome is likely to be? Either procedure will be correct but it is important that the statistical office state explicitly which policy is being followed.

Forecasts of crop yields during the growing season are useful in many ways. They are based largely on the appearance of the plants at the time of the forecast. Various countries publish only data that describe the general appearance of the crop; in the United States the data are converted into forecasts of actual yield. The appearance of the crop is reported as *condition as percent of normal,* in which farmers are asked to make a percentage estimate of the appearance of the plants as compared with the appearance that would lead to a full crop. A condition of 80 percent means that the appearance of the plants indicates a crop only 80 percent as large as if the appearance of the plants were as near perfect as one would have a right to expect when everything was favorable. It is important to notice that "normal" does not mean "perfect"; it means something that can be attained more frequently. To translate a condition of 80 percent into an estimate of yield, one could use a simple *par* approach. Suppose the reported condition was 90 percent in a past year when the yield of wheat was 25 bushels per acre. The *par yield* is the hypothetical yield associated with a condition of 100 percent or $25/0.90 = 28$ bushels per acre. A current condition of 80 percent thus indicates a yield of $28 \times 0.80 = 22$ bushels per acre. This method is still used but the tendency has been to substitute regression charts on which yields for past years are plotted against reported condition for the same years: this eliminates the restricting assumption of proportionality between yield and reported condition

that is not always justified. It is also becoming more fashionable to ask farmers to report their own individual predictions of yields (probable yields), rather than "condition." This seems to be particularly desirable as the growing season approaches its close.

It is often necessary to allow for time trends when translating early indications into estimates of yields; the relationship between reported condition or probable yield and the final yield does not always remain constant. The introduction of higher-yielding varieties, improvement in farming practices, and shifts in the areas where the crop is grown, all tend to have an effect on the relationship. Sometimes factors causing such trends can be identified and measured, but often little more can be done than to treat them as time trends and project them as such.

Weather data are correlated with yields and considerable effort has been spent on trying to use weather records during the growing season as a tool for forecasting yields. The results to date have not been too encouraging; farmers' reports of condition or probable yield have proven to be better indicators of final yields. However, weather data do contribute something when used in conjunction with farmers' reports; farmers apparently are too optimistic in reporting condition wheen the weather is favorable and too pessimistic when weather is unfavorable. Using a weather factor, such as rainfall, as a second variable with reported condition or probable yield usually improves the forecast.

Attempts have also been made to use objective plant measurements as a refinement of the condition approach. Such measurements as height of grain plants or number of kernels per plant, counts of bolls per plant in cotton, and counts of fruit made on portions of selected fruit trees by placing a frame against the sides of the trees, and records of date of blooming of fruit trees, have been used quite extensively. In some cases the forecasts are improved by using such measurements. Apparently, the Japanese have made very extensive use of detailed plant measurements and observation as devices for forecasting yields of rice and cereals.

FACTORS AFFECTING THE CHOICE OF METHODS OF ESTIMATING AND FORECASTING

The methods to be selected for use by any one country depend upon a number of factors. The data that are already available in various places in the country need to be examined to see to what extent they can serve without conducting additional surveys. This is ordinarily not an expensive undertaking and should be done before any surveys are planned. Even if it develops that new surveys must be instituted, the data already available may provide useful background material for designing samples and testing the accuracy of results.

Whether surveys should be made by mail or by interview, or by combination of the two methods, depends upon factors already discussed. It would appear that in many countries the interview method is to be preferred over the mail approach in contacts with the bulk of small

farmers; the mail approach might be successful with operators of large ranches or estates, and with business establishments. Of course, for the latter method, a list of names and addresses representing the universe of such large farms, or of such business establishments, must be available; one must be set up if is not already available. The mail approach might also be useful in crop forecasting, provided cooperative people with the necessary ability can be found in every selected locality to report regularly on crop conditions.

If interview surveys seem to be the only practicable method, the design of the sample may be restricted by the amount and kind of background data that are available. The detail shown on existing maps and the statistical data available for small political subdivisions and other small areas are also pertinent factors. It is necessary to decide whether sampling within first-stage units should be done with small area segments as the subunits or whether individual farms should be used. If individual farms are to be used, it may be necessary to take a census of all farms in each selected first-stage unit and to stratify the farms before drawing the sample.

The importance of preparing to deal with response errors cannot be stressed too strongly. Resorting to objective measurements as a complete substitute for judgment estimates is expensive, usually prohibitively so. However, in some cases it is quite practicable to check judgment estimates with a limited amount of objective measuring. Sometimes marketing and trade statistics are available, or can be assembled at fairly low cost, to check the validity of farmers' reports. If objective measurements are too expensive to be used, and if no other check data are available, the only alternative is to measure the variability in response to the same questions on at least two successive interviews for a sample of respondents. This will not eliminate response errors, but it will provide some indication of their magnitude so they can be treated as a component of sampling error. This is not completely satisfactory because it involves the assumption that such errors are random when, in fact, they may be biased in one direction or the other. Some experimental work that has been done in Puerto Rico indicates that data obtained on successive interviews tend to average out to the same figure, even though individual responses vary widely from one interview to the next.

In planning a statistical sampling program where none is already in existence, one must be governed partly by the urgency of the needs for estimates. It should be obvious that background data about a universe permit the formulation of more efficient sample designs; the refinements that can be introduced into a sample design are limited by the amount of such data that is available. When very little background information is at hand, it would be preferable from the theoretical standpoint to spend a few years in assembling such data before attempting to do any sampling at all. Efforts should be directed toward such activities as a census of the country and the drawing of detailed maps,

which will provide a foundation for a sampling program. But when estimates are needed immediately, there is no time to do all of this preliminary work. It is necessary to design the best samples possible with the information that may be at hand. Under such conditions the samples will need to be larger to yield the desired accuracy, and the expense of the sampling program will be higher. However, it is still possible to refine the program in the future as more data about the universe are accumulated. The person who designs the sample should be alert to the kind of background information available that would be useful in making such refinements and to assemble it as fast as conditions permit.

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USE OF CHECK DATA IN CROP ESTIMATING*

RESUMEN

Este artículo explica el valor y uso que tienen otras fuentes disponibles de datos para determinar la validez de las estimaciones agropecuarias oficiales. En los Estados Unidos existen disponibles muchas fuentes de datos de comprobación sobre un número crecido de tópicos relacionados de cultivos, ganadería, precios, etc. Las fuentes son tomadas en cuenta en el lugar por el cual debe pasar el mayor volumen de un producto.

Como quiera que, en la mayoría de los casos, los datos de comprobación no se hacen disponibles sino hasta después de que ha sido recolectada la cosecha, las estimaciones continuas o los pronósticos sólo pueden verificarse después de que aquélla ha tenido lugar. Por lo tanto, los datos de comprobación resultan útiles para verificar estimaciones pasadas. Este procedimiento es muy útil, sin embargo, por cuanto permite disponer del nivel real de estimaciones anteriores para hacer las estimaciones continuas. El censo de agricultura constituye una de las fuentes más importantes de datos sobre superficie de los cultivos, rendimiento por acre y producción, así como sobre la producción pecuaria y avícola y las existencias de ganados y aves de corral. El Censo es usado principalmente para hacer revisiones quinquenales.

Se explican con algún detalle las formas de usar ciertos grupos de datos de comprobación en la preparación de estimaciones oficiales de cultivos específicos, tales como tabaco, arroz, maní, lino y soya.

Introduction

Two methods are in general use in accounting for a defined population. One method is to make a complete count, commonly known as taking a census. The other is to sample the so-called universe and estimate the population of the universe from the sample data. For the purpose of this discussion estimates based on sampling will be considered.

Sampling will usually give a good estimate of an item, if the sampling process is technically correct in all details. However, in mail sampling, such as that employed by the Crop Reporting Service of the United States Department of Agriculture, the sampling processes cannot all be fully controlled. This necessitates using other means to check the accuracy of the estimates, whether they relate to bushels of wheat produced in a given State or number of livestock on hand as of a given date, or some other item of equal importance. Even where all the sampling processes can be controlled, the estimates based upon the sample may still not give the true answer. Therefore, to check these various estimates, all known

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sources of check data are explored to determine the validity of the estimates. Estimates based on sampling may be, and most often are, as accurate as a census, but it is usually worth while to check the accuracy of such estimates by means of whatever check data are available.

In the United States many sources of check data are available on a large number of items, relating to crops, livestock, prices, and other items. The sources are tapped at the point where the largest volume of a commodity must pass. Most agricultural commodities in this country except those that are consumed on farms where produced, such as corn, usually fall into this category. For example, all cotton must be ginned, all sugar beets must pass through a sugar factory, most rice must be milled, all tobacco is sold, all peanuts are picked by machine and so on. There are scores of other commodities where a large part of the output must pass through some point of concentration. Examples of these are wheat, certain seed crops, most commercial vegetables, hogs, certain dairy products and many others. Price quotations also are used to check the level of agricultural price estimates.

Since check data are, for the most part, not available until after a crop has been harvested, current estimates or forecasts cannot be checked until after the fact. Therefore, check data are most useful in checking the level of estimates following the year of production, or even later. In general, each commodity has its own peculiarities. For example, Maryland tobacco raised in one year is not all sold until the end of the following year. Check data are used mainly to "true up" the historic estimates. This procedure, however, is very useful in that the true level of previous estimates is available for current estimating purposes.

Check data on crops relate mostly to production. Some check data are available on acreage of such crops as sugar cane for sugar, sugar beets for sugar, and for types of tobacco which are under Government acreage control. There are few checks on yields per acre and those that are available are derived from acreage harvested and production.

The development of check data goes hand-in-hand with the regular estimating program. It takes time, patience, and ingenuity to develop and maintain the various sources of check data. Some result from State and Federal laws. Other sources stem from Government programs, particularly the acreage allotment programs, where an entire crop is under acreage control. These programs often vary from year to year and thus the usefulness of the data varies from year to year. Some States—at present a dozen or so—have State assessors' laws which provide for State censuses to be made of specified crops and livestock each year. By far the largest source of check data is commercial establishments, particularly processors of one kind or another. Most of these firms provide the information on a voluntary basis and without cost. In some isolated cases, and for particular reasons, the data are paid for—usually by paying some employee of the firm to draw off the desired data.

The United States federal census of agriculture is one of the most important sources of data on crop acreage, yield per acre and production, as well as livestock and poultry production and inventory numbers. The federal census data are used primarily in making five-year revisions.

Sampling and check data are counterparts in the preparation of official estimates of agricultural items. This dual system provides reliable estimates at a minimum of cost. The check data are usually a by-product of business transactions. The pattern of check data changes over time. This keeps the statistician always on the alert for facts upon which to weigh the validity of the data. All check information must be carefully analyzed before it is used. It must be analyzed bit by bit and piece by piece before it is ready for use in changing an official estimate. The following paragraphs treat the sources and methods of using certain groups of check data in the preparation of official estimates.

Crop check data in relation to tobacco estimates program

Fortunately for the tobacco estimates program, reliable check data are available for most of the types of tobacco for which estimates are prepared. These data are available annually and are in addition to the information provided every five years by the federal census. Briefly, the check data consist of the following: (1) Acreage measurements as made by the Production and Marketing Administration (PMA); (2) warehouse sales as reported by PMA and cooperating State agencies; (3) marketing card data as compiled by PMA; (4) internal revenue data on production.

The timeliness and the availability of these data vary by types. For example, acreage measurements are available only for those crops under a marketing quota. In 1952, this means that there will not be any measurements for Maryland tobacco or for any of the cigar types. Louisiana Perique tobacco has never been under quota, consequently acreage measurements have never been available for this type. With these exceptions, acreage measurements will be available for consideration in establishing the Crop Reporting Board acres harvested. In regard to timeliness, this depends largely on the marketing season. For example, the Maryland crop is held over and marketed the following year.

As for warehouse sales, these are published by the Market News Service and cooperating State agencies during the marketing season. Unfortunately, this service is not extended to all types although the principal omissions are the cigar types. At the end of the marketing season, producers' sales as well as gross sales are available from this source.

Tabulation of marketing card data by the PMA provides an excellent check on acreage and production, by counties, and also provides some much-needed information on cross-State sales.

In instances where this wealth of check data already mentioned is not available, invoices as filed with Internal Revenue Bureau on receipts of tobacco from farmers are tabulated. Reporting of tobacco purchases to this agency is required of the purchaser by public law. Obviously, the task of summarizing these invoices is very laborious; consequently the summarization is restricted primarily to non-quota types. The tabulation of internal revenue data relates only to production; hence for some types an acreage check is lacking except for census years.

The use of crop check data may be presented against this background of the availability of the data. Acreage measurements by States are plotted against the Crop Reporting Board acres for harvest. As would be expected, the charts show a high degree of correlation. These data are available in time for use in preparing the December estimates. On production, charts show producers' sales at warehouses vs. Board production. These data are available for flue-cured tobacco by December but for other types these data are not available by December since the marketing season is not over. Except for Maryland tobacco, the marketing season ends in time for these data to be available for revisions in May. As stated above, tabulation of marketing card data provides an excellent check on cross-State sales. Producers' sales at warehouses by States corrected for cross-State movement should theoretically agree with the marketing card total on production. In practice, these two totals do not agree due to tabulation errors but the difference is usually small. These two totals, arrived at by entirely different methods, give added confidence when they agree within limits. As for internal revenue data, the production totals as obtained by types are plotted against Board production.

It is obvious from the foregoing that most tobacco is grown under quota, hence, acreage data and sales data are available for "truing up" tobacco estimates. Fortunately, most of these data are available in time for May revisions; thus, the new crop year can be started in July with a corrected base from which to work.

Use of check data in estimating rice production

Rice production in the United States is concentrated in two principal areas; namely, Arkansas, Louisiana, Mississippi, and Texas constituting the Southern area, and California constituting the Western area. In both areas, practically all the rice leaves the farm at the time of harvest for storage at mills, public dryers and elevators and in public warehouses which are located in or adjacent to the areas of production. Likewise, practically all of the rice is eventually milled at mills located in or adjacent to the areas of production. Although rice produced in any one of the four Southern States may be milled at any mill located in this area, very seldom is any rice transported for milling purposes from one area

to another. Finally, since all rice for commercial purposes eventually has to pass through a mill and these mills and other storages are concentrated in a comparatively small area, a reasonably good check of production can be made without too much extra expense.

Immediately at the end of each crop year (July 31 for the Southern area and September 30 for the Western area) each mill is contacted either by mailed questionnaire or personal visitation, or both, for the purpose of obtaining a report of receipts of rough rice by State of origin during the previous year, the quantities of rough rice sold as seed, exported and transferred to other mills from these receipts, and the average price paid directly to farmers for the rice purchased during the previous season. In addition, each public warehouse, dryer or elevator is contacted for a report of all rough rice remaining in public storages, and estimated quantities of rough rice remaining on farms is obtained by the use of mailed questionnaires. Usually, the quantities of rough rice remaining in public storages and on farms at the end of the crop year is very small.

When the above data are summarized and supplemented by other data available in the office, a summary for each rice-producing State is prepared as follows:

1. Gross receipts of 1951 rough rice at mills.
2. Less receipts of 1951 rough rice from other mills.
3. Net receipts of 1951 rough rice (item 1 less item 2).
4. Exports of 1951 rough rice (obtained from Census).
5. Total (items 3 and 4).
6. Estimated seed used for seeding 1952 crop (mailed questionnaire).
7. Estimated quantity used for food on farms where grown (mailed questionnaire).
8. Estimated amount fed on farms where grown (mailed questionnaire).
9. Carry-out stocks: (a) On farms; (b) in public warehouses.
10. Total (items 5, 6, 7, 8, and 9).
11. Seed reported sold by mills.
12. Exports reported by mills.
13. Total (items 11 and 12).
14. Indicated production (item 10 less item 13).

Indicated production from item 14 above provides a basis for "truing-up" the previous years' production the following December, by States, areas, and the Nation. This kind of crop-check which has been used for 15 or more years has proven to be a very reliable indication of production.

Check data available for use in estimating production of peanuts

Several sources of check data are available from time to time which can be used for "truing-up" the estimates of production of peanuts either on a state, area or national level.

For the three years that the Production and Marketing Administration program on peanuts is in action, their data on sales provide a reasonably good check on production by States and a somewhat better indication by areas. Under this procedure, each lot of peanuts which is disposed of by

the grower is recorded on a card or ticket showing the gross and net weights, percentages of sound meat kernels, foreign matter, moisture, etc. Copies of these reports are forwarded to the respective state and county PMA offices. The use of these data are limited because of some incompleteness; also changes in the program may tend to disturb comparability, and the program usually is not continuous.

In some years the Federal-State Inspection Service inspects a large percentage of all farmers' stock peanuts sold. In years when this service covers states or areas fairly intensively, final inspections provide a reasonably good indication of production on an area basis. State totals of inspections are not too reliable because of cross-state movement. The degree of completeness of these inspections varies from year to year depending upon movement of the crop before inspections are established, how intensive the inspections cover all points of delivery, and other factors.

Since 1938 the Agricultural Estimates Branch of the Bureau of Agricultural Economics has collected and published monthly peanut stocks and processing reports in compliance with the Federal Peanut Statistics Act as amended May 12, 1938. Section 3 of this Act states: "It shall be the duty of every warehouseman, broker, cleaner, sheller, dealer, growers' cooperative association, crusher, salter, manufacturer of peanut products, and owner or operator of peanut picking or threshing machines to furnish promptly, upon request of the Secretary, within the time prescribed by him, a report of the quantity of peanuts and peanut oil received, processed, shipped and owned by or on hand and in the case of an operator of peanut picking and threshing machines the quantity picked and threshed, segregating in accordance with forms furnished for the purpose by the Secretary." This section of the Act is quoted in order to emphasize the broad coverage from which peanut statistics are made available.

From a crop estimates standpoint the reports obtained from operators of picking and threshing machines are sufficient to provide an excellent basis for establishing yields per acre by States and they have been relied upon very heavily for this purpose for many years.

Monthly reports from peanut millers and crushers, among other data, furnish by types the quantities of farmers' stock peanuts on hand at the beginning of the month, receipts, shipments, quantities cleaned and shelled, crushed, lost and end of month stocks. Thus, since all farmers' stock peanuts eventually have to pass through mills and crushers, and complete coverage of all mills is stressed each month, the summary of these data at the end of the season, when supplemented by reports of farmers' stock peanuts in storages other than at mills, estimates of seed for the following year's crop, and the quantities used for food and feed on producing farms, gives an excellent check on production by areas and the Nation. These data are usually available for revising current year estimates the following July. Thus, the series of data used for estimating production of peanuts are "trued-up" each year so that current estimates are based on correct levels.

Flaxseed and soybeans

An essential condition in the usefulness of crop check information in crop estimating is that a major proportion of the crop funnel through certain channels for processing and that data on the flow through such channels can be readily obtained. Among the commodities for which such data are available are flaxseed and soybeans. Processors of these commodities are required by law to report on their operations to the Bureau of the Census. The schedule in use by the Bureau of the Census obtains for each month individual plant data on carry-in stocks, receipts, quantity processed and carry-out stocks. At first glance this would appear to answer all the questions; however, there are problems such as the varying bases for quantities reported and the fact that there is no way to distinguish between new crop and old crop flaxseed or soybeans at the end of a marketing season. Nor are the data available as to State of origin in most instances, thus limiting the usefulness to a check on national production.

The data on quantities of flaxseed and soybeans processed each month are of significant value, however, when their weaknesses are known and taken into acount. With survey data available indicating quantities used for seed, fed on farms, and on hand, together with records of imports and exports, a fairly reliable check sheet for the United States can be worked out and used as a basis for revising the level of the preceding year's crop. In a few instances, statisticians in some States have, by special efforts, obtained data on receipts of soybeans by processors, by States, in order to establish crop checks for their States.

Somewhat similarly, crop checks can be built up for wheat in certain States where the bulk of the crop moves by rail, using railroad shipment data and survey data on seed, feed and stock items. In these States, the crop checks are interpreted on regression charts, but the more common use is in building up a production total for the country as a whole. In this instance we have available the quantity of wheat milled into flour, as reported by the Bureau of the Census, data on imports and exports, trade information on industrial uses, estimates of the quantities required to seed next year's acreage and to be used for livestock feed and family use on the farms growing wheat.

When a national total of quantities used has been worked up for the country as a whole, using these check data for a particular commodity, this total is compared with the preliminary national production estimate for the past crop season, to determine whether the latter need be adjusted upward or downward. If adjustment appears necessary, the individual State indications on acreage and yield are reexamined to determine whether different interpretations in either or both may be made from the usual regression charts, within the limits of the data available. After this reevaluation of the indications, revisions of the States' previous year's production are prepared, for the purpose of approaching the national total indicated by the crop check.

Crop check information was also useful in evaluating the national data on 1949 production of various crops, as obtained in the 1950 Federal Census of Agriculture. Agricultural census data, by States, are regarded as benchmarks available every five years, upon which to base revisions of the previous five years and projections for the next five intercensal years. But even the census enumerations must be examined in the light of the crop checks available for the nation. Risking oversimplification in the description, it can be said that the revisions process follows about these same steps for each commodity:

1. The census acreage, production, and computed yield per acre for a State, are evaluated in the Statistician's office before they are accepted as benchmarks. This process may involve comparison, county by county, of reported farmland, cropland, and number of farms with data from previous censuses, with State farm census (assessors) enumerations where available, and with data available from farm programs.

2. If check data are available for individual crops—cotton, tobacco, rice, peanuts, sugar beets, etc.—some measure of the degree of completeness in the census enumeration can be obtained for these crops and used as the basis of an assumption for application to non-check crops. Other criteria may be used for other crops. The degree of completeness for individual crops may vary depending upon such factors as whether the crop is grown state-wide or only in certain counties where the census enumeration is demonstrated to be poor or reliable, as the case may be.

3. A 1949 acreage is set up for each crop, which is as comparable as conditions permit with the 1944 acreage, based upon the level indicated by the census and check information. If this does not vary significantly from the current estimate, no revision is required. If a significant difference is involved, steps are taken to revise the information for previous years.

4. Time charts previously prepared show on semi-logarithmic ruled chart paper the various indications used currently in setting up the annual acreages for the 1944-49 period. Entering the adopted 1949 benchmark on this chart, the annual data are re-appraised to determine in how many and which years of the period revisions need to be made to bring the line showing the Board estimates to the 1949 benchmark. These readings are adjusted to whole percentage changes from each previous year as a means of computing the revised annual acreages.

5. Yields as computed from census data are usually accepted, inasmuch as they are based on a nearly complete enumeration. They are scrutinized by counties and townships, however, particularly if the production was computed from adopted acreage and this yield does not approximate the check production. Departures from census yield are accepted only upon conclusive evidence. If the 1949 census yield is

materially different from the current estimate, the current indications are examined for representativeness and yields are adjusted to the new 1944-49 chart level in line with each year's indications from the various survey sources.

6. Review is made by members of the Crop Reporting Board in Washington particularly in view of check information at the national level. If these crop checks indicate that the census level of acreage and/or production is in need of adjustment, further adjustments in individual State estimates are made as required, after consultation with the State Statistician.

An extremely helpful source of check information is found in the State farm censuses taken annually by assessors in 14 States, 10 of which are in the important North Central region. These enumerations vary considerably in the degree of completeness of coverage, in crop items enumerated and in date of enumeration. Methods of utilizing the data must vary, therefore. In general, these data are treated as very large acreage samples, from which ratio to land in farms and direct percentage change indications are derived and interpreted by means of regression charts. In some States, these enumerations are of a current nature, listing acreages of crops planted and to be planted in the spring, with an intermingling of historical questions on acreage of fall-sown crops, hay, and seeds harvested the preceding season. In most States, the data collected are of a historical nature, all pertaining to acreages harvested the previous season; in two States only, data are collected on both acreage and production, from which yields may be derived. In most States having these enumerations, the reported data are expanded to completeness on the basis of land in farms and numbers of farms covered. In those States making enumerations of the current type, these adjusted data become available in time to be used in setting the December estimates of the current year's acreage. In a few of these States, data for sample townships become available in June, in time to be used in identical comparisons with the previous year's data, and furnish the basis for July 1 acreage estimates. For those States making historical enumerations, the data become the basis for revisions in December of the previous year's harvested acreages, if necessary.

Importance of a crop check for Kentucky bluegrass

Kentucky bluegrass is not an important farm crop but the seed of this crop, straight or mixed with other seeds for sowing on lawns, is probably bought by more persons in the United States than any other seed. Chiefly because it is so universally handled by dealers in the central and northern two-thirds of the United States and because it costs more to process than any other seed, it is important that forecasts of its production be as accurate as possible.

Inasmuch as (1) only a small percentage of the Kentucky bluegrass seed crop is actually stripped (harvested) by the farmers from whose pastures or meadows the seed is obtained, (2) usually only the better portions of fields are stripped, and (3) production of this seed varies considerably— from 7,666,000 pounds to 30,235,000 pounds of clean seed during the last 6 years, reliable data for the production forecast cannot be obtained by methods commonly employed in estimating the production of most other crops. First-hand information about June 15-30 when the crop is being harvested or cured, is obtained from independent and company strippers (employed by the thresher-cleaners), yard men who supervise the curing of the seed, field representatives of thresher-cleaners, and others, together with personal observations of the seed in pastures, meadows, or on curing yards.

The forecast is made the first week of July and the crop check early in December, by which time most of the seed from the current crop has been threshed and cleaned. Reports are received at that time from all dealers who thresh and clean practically the entire crop. These dealers are asked to furnish information regarding the quantity of cured seed of the current crop, threshed and cleaned by them, the percentage produced in each State and the quantity of recleaned seed weighing 21 pounds per measured bushel or having a purity of 85 percent, that was obtained or would be obtained in case threshing and cleaning operations had not been completed. These check data indicate in which States the data used in compiling the forecasts for the Kentucky and Western districts were too high, too low, or approximately correct. Were it not for this crop check, akin to a census enumeration, it would be difficult to keep the forecasts on the right level, chiefly because the production usually varies considerably from one year to the next.

Useful crop-checks in estimating seed crops

A crop-check is a useful tool in estimating seed crops, but as with the use of crop-checks for other crops, all the various uses made of the crop must be known. Otherwise conclusions based on crop checks will be misleading. One of the better exmples of making use of check-date in "truing-up" estimates of production is that employed annually by the Division of Field Crop Statistics of the Agricultural Estimates Branch of the Bureau of Agricultural Economics, in connection with alfalfa seed in Oklahoma. This State ranks among the top five alfalfa-seed producing States. The annual crop is highly comercial, i.e., a large portion of the annual production is sold by growers to dealers. Furthermore most of the seed is handled by dealers who are members of the U.S. Seed Verification Service. As members of this Federal organization, each dealer agrees to keep accurate records showing the origin (where seed was produced) of each individual lot of seed handled by him. These records are open for inspection by authorized Federal Seed Inspectors.

The dealers pay a fee of three cents a pound for all the seed which is entered for verification. In return for this expenditure, the dealer enjoys a degree of prestige with the buying public through the advertising and sale of seed of known origin.

From the records submitted by the dealers to the Seed Act Division of the production and Marketing Administration, totals are obtained of all lots of seed verified as of Oklahoma origin. These totals are available by months, and can be used for indicating the relative size of a current crop several months before all the seed is moved out of the State. The final total for the 12-month crop-marketing year, when used in conjunction with indications of disposition made of the seed by farmers such as (1) sales to dealers, (2) sales to farmers, and (3) seed held for home use, can be used as a direct measure of the size of the alfalfa seed crop for a given year. The data used in this case are shown below:

UNITED STATES VERIFICATION SERVICE: ALFALFA SEED, OKLAHOMA, TOTALS VERIFIED

Year	6-Months total	7-Months total	8-Months total	9-Months total	12 Months verification total July1-June30	Final production estimate (000 pounds) clean seed
1946	8,881	8,973	9,075	9,133	9,138	10,400
1947	8,605	9,294	10,067	10,500	12,237	15,800
1948	4,987	5,083	5,161	5,220	5,253	4,300
1949	9,398	10,071	10,648	10,837	11,192	13,400
1950	6,210	6,767	6,921	7,004	7,029	8,100
1951	5,151	5,439	5,513	5,538	5,639	7,000

There is a high degree of correlation between the verification totals and the final official estimate of the production of alfalfa seed. In fact, a good correlaction exists in years of normal movement between any particular month and the final Crop Reporting Board estimate. The reason for this is, as already stated in the foregoing discussion, that the Oklahoma alfalfa seed crop is highly comercial (about 80-90 percent sold to dealers) and rate of movement from farms is usually similar from one year to the next.

In 1948 the final estimate for Oklahoma was below the verification total. This unusual situation is attributed to the fact that in the previous year 1947, farmers did not sell the usual portion of the crop because of the large production and low prices. However, the seed carried over on farms in 1947 was sold the following year to satisfy seeding demand in the fall of 1948. Therefore much of the 1947 crop seed was included in the

verification totals for the 1948 crop year. The behavior of this particular crop-check demonstrates one of the pitfalls of a crop-check. As a rule farmers take care of their own needs first, next they sell whatever the market will absorb at a satisfactory price, and will hold the remainder for future sale.

Conclusions based on past experience with crop-checks are: (1) That because varying portions of the crop are sold to the various segments of the trade each year, it is necessary to obtain annually indications of disposition, i.e., percent of the crop sold to dealers, to farmers, to others (including the government) and the percent held for home use. These indications are needed to expand the segment of the crop measured (such as the verification totals) to a 100 percent equivalent. (2) That under ordinary circumstances it is impossible to obtain a complete crop-check, and therefore allowance must be made for several points error in the indications.

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SOME PROBLEMS OF TABULATION IN AGRICULTURAL MAIL SAMPLING*

By WALTER H. EBLING, U.S.A.**

RESUMEN

El autor describe el proceso de tabulación de investigaciones estadístico-agropecuarias en el Estado de Wisconsin, E.U.A., en las cuales se hace uso del muestreo voluntario por correo. Dicho proceso de tabulación, que constituye la fase del trabajo estadístico mediante la cual muchas observaciones o informes son reducidos a resúmenes o promedios, ha alcanzado en ese Estado, así como en los restantes del país, un alto grado de uniformidad, rapidez y eficacia.

Esquemáticamente, tal proceso puede resumirse así: Una vez que los cuestionarios llenados por los agricultores han sido devueltos a la oficina estadual de estadística agropecuaria, son clasificados por condados y distritos agrícolas y sometidos a una crítica rápida. Los datos de los cuestionarios son luego transcritos a mano, anotando a cada agricultor individualmente, a formularios especiales de concentración de condados, cuyos rayado vertical y títulos de columnas son similares a aquéllos de los cuestionarios de recolección de datos. Se emplea una de estas hojas para cada condado, la cual se revisa y critica cuidadosamente antes de resumir, en cifras globales para cada renglón investigado, los datos de cada condado. El proceso de revisión y crítica tiene por objeto corregir errores que pudieran deberse a anotaciones equivocadas en cualquier línea o columna, y eliminar cifras inconsistentes. Después de que los datos de cada condado han sido resumidos en la forma deseada, se totalizan y clasifican por distritos estadístico-agrícolas (hay nueve de éstos en el Estado). Los totales de cada distrito son luego pasados individualmente a formularios resúmenes de todo el Estado, en los cuales se computan diversos promedios simples y ponderados.

En la actualidad se tabulan anualmente 409 informes estadísticos distintos en Wisconsin por el procedimiento anteriormente descrito.

Introduction

Tabulation is that part of agricultural data work by which many observations or reports may be reduced to summaries or averages. In agriculture it is usually necessary to get a number of observations from different parts of a producing area in order to attempt a combination of sample material that will represent the whole. Obviously, this phase of the operation is only a part of the entire survey which includes the original planning, the collection of the data, the tabulation, interpretation, and publication. While tabulation has some problems that are characteristic of this phase, it is, nevertheless, an integral part of the whole survey. Since this work is old, it should be pointed out that the systems now

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used have developed over a considerable period of time. Problems of tabulation may be divided into two broad classes—those dealing with enumeration and those dealing with samples. The type of agricultural surveys with which I shall try to deal in this short article are those based on samples and made by the Federal-State Crop Reporting Service offices in the United States and more especially those in Wisconsin. To include enumerations such as the Census of Agriculture, where tabulation is largely summation, would add too much for coverage in this paper.

Sample surveys in the States are summarized to provide data for a particular State. The final assembling of summaries for the States into a national report in the U.S. Department of Agriculture in Washington consists mainly of bringing together the tabulations which have been separately prepared from samples for each State. While these are rechecked or pre-audited, at the national level, the work there is nevertheless a matter of consolidating State summaries into national ones. The tabulation of primary data from the field is done mainly in State offices. There are about 40 such offices and most of them are cooperative with the States.

Because most of the agricultural data surveys in the States must be made quickly and cheaply, sampling is almost entirely by mail. There are some exceptions to this, such as assessors' reports in which tax officials enumerate certain data, mainly acreage, while they perform their regular duties. In a sense such enumerations are by-products of tax work. Some attempts have also been made to collect data by enumerated samples, but these are too expensive and slow for widespread use with dnamic data. Hence, the observations which follow relate to the tabulation of the mailed type of surveys in the State agricultural statistics offices.

So many surveys flow through a State office that the time for tabulation is short. Release dates for the finished reports at the national level generally determine the mailing dates and tabulation time. The Wisconsin office tabulates or participates in *409* statistical reports in one year, according to the schedule in figure 1. By groups these are as follows: Crops, 123; livestock, 63; dairy, 28; prices, 92; other, 103.

This does not include administrative reports, of which there are nearly a hundred per year, nor make allowance for the fact that some of the regular reports cover so many items that they are actually multiple in character. Assuming 250 working days in a year, it means that on an average 1.6 reports are tabulated per day. The average number of questions per reports is 17.

How can so great a flow of reports be made in a small office? Clearly it depends on several things: (1) A rapid means of communication, (2) the cooperation of thousands of people who supply the needed information by mail, and (3) a standardized system of rapid tabulation. In the United States the postal system is so well developed that a questionnaire from a crop reporting office to a farmer or other respondent reaches him in one or two days. If he returns it promptly, the questionnaire can make

the round trip in three or four days. Most of the returns used in a regular tabulation come back in a week or ten days from the time of mailing. In this way, voluntary correspondents scattered widely through the agricultural universe report their observations and judgment on many items in a short time.

Designing the schedule

The design of the schedule to collect the information is basic to the whole operation and the tabulation follows the schedule pattern. The whole survey rests upon the schedule. It is well known that a mailed inquiry must be limited in the amount of data requested from the respondent, and questions must be such that he can answer them specifically and easily from his own knowledge and observation. For the most part, such questionnaires ask for data which men can supply from memory or easy observation, with little recourse to records. This is necessary to get enough schedules filled out and returned promptly. When the schedules providing the data to be tabulated are returned, the material thereon can be no better than the answer respondents can give readily. Once the information has been obtained, a series of steps and problems lies ahead in processing it into summaries.

Proper sequence of questions on a schedule is important. If they are arranged in groups so that the reporter can go through them quickly and logically, he finds it easiest to supply what is wanted. The right order of the subject matter helps him. When it comes to the tabulation, the right arrangement of the data is likewise helpful. The end products of tabulation can be little better than the raw material from which they are made; hence the great importance of the organization and content of the schedule itself. In fact the tabulation is a counterpart of the schedule, like a man's shadow in the mid-afternoon sun.

Stratifying and weighting by districts

Since only a part of the schedules mailed out are returned, the distribution in the universe becomes uncertain. For general purposes (inquiries such as regular crop reports, regular price reports, regular dairy reports and the like), the respondents are mostly experienced reporters who are accustomed to making such reports. From such lists the returns in time for use run close to one half of the number of schedules mailed out. When other lists are used a smaller percentage of the schedules is usually returned. Because general mailing lists cover the State in about the proportion in which the State's agriculture is distributed, the higher the rate of return the better the distribution in the universe is likely to be.

In a sample, proportional geographic representation for all parts of the universe cannot be taken for granted. Crop and livestock distribution patterns vary greatly. Some are concentrated more heavily in certain areas. The questionnaires mailed out in a general purpose inquiry cover

Figure 1.

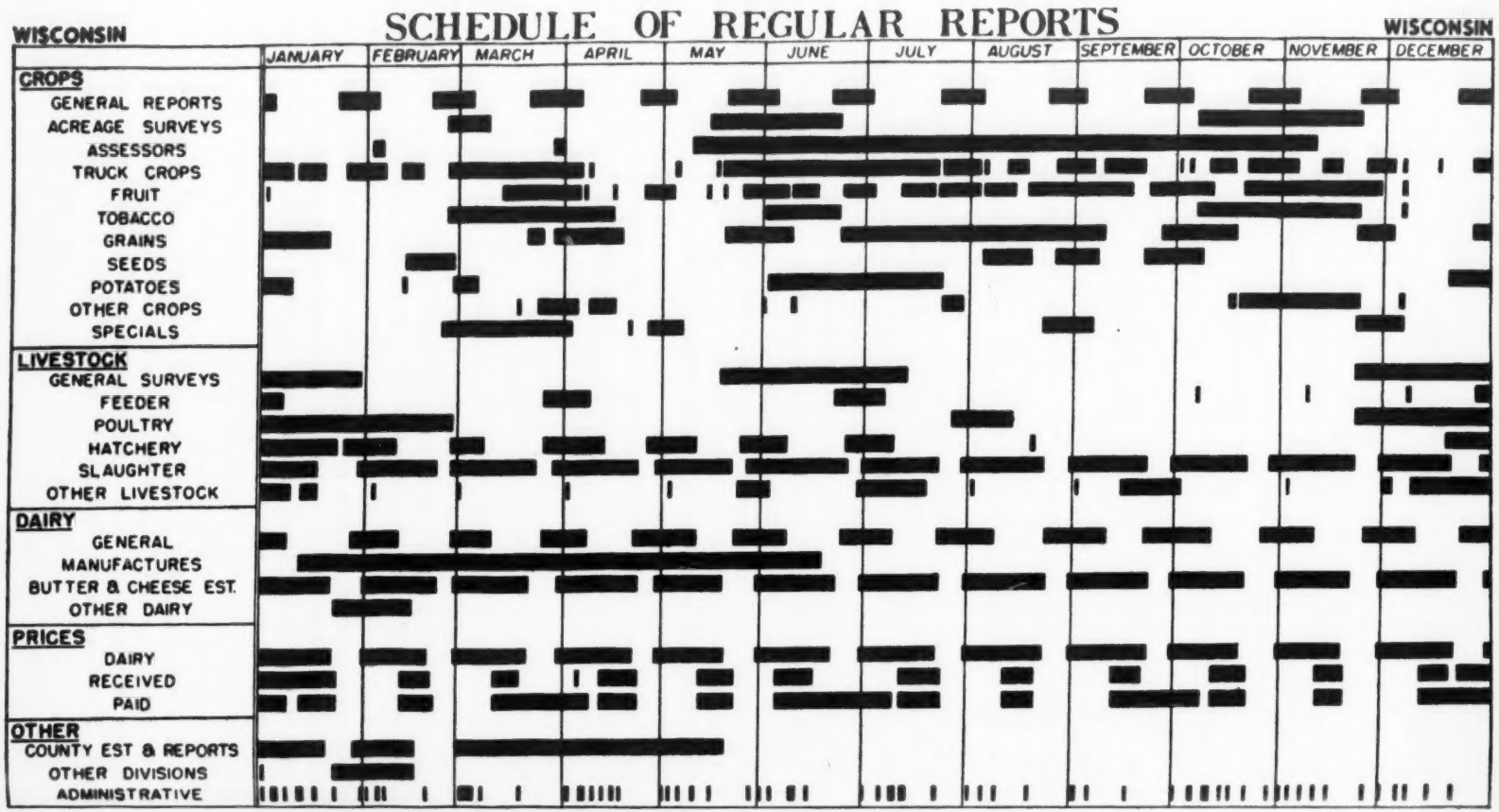
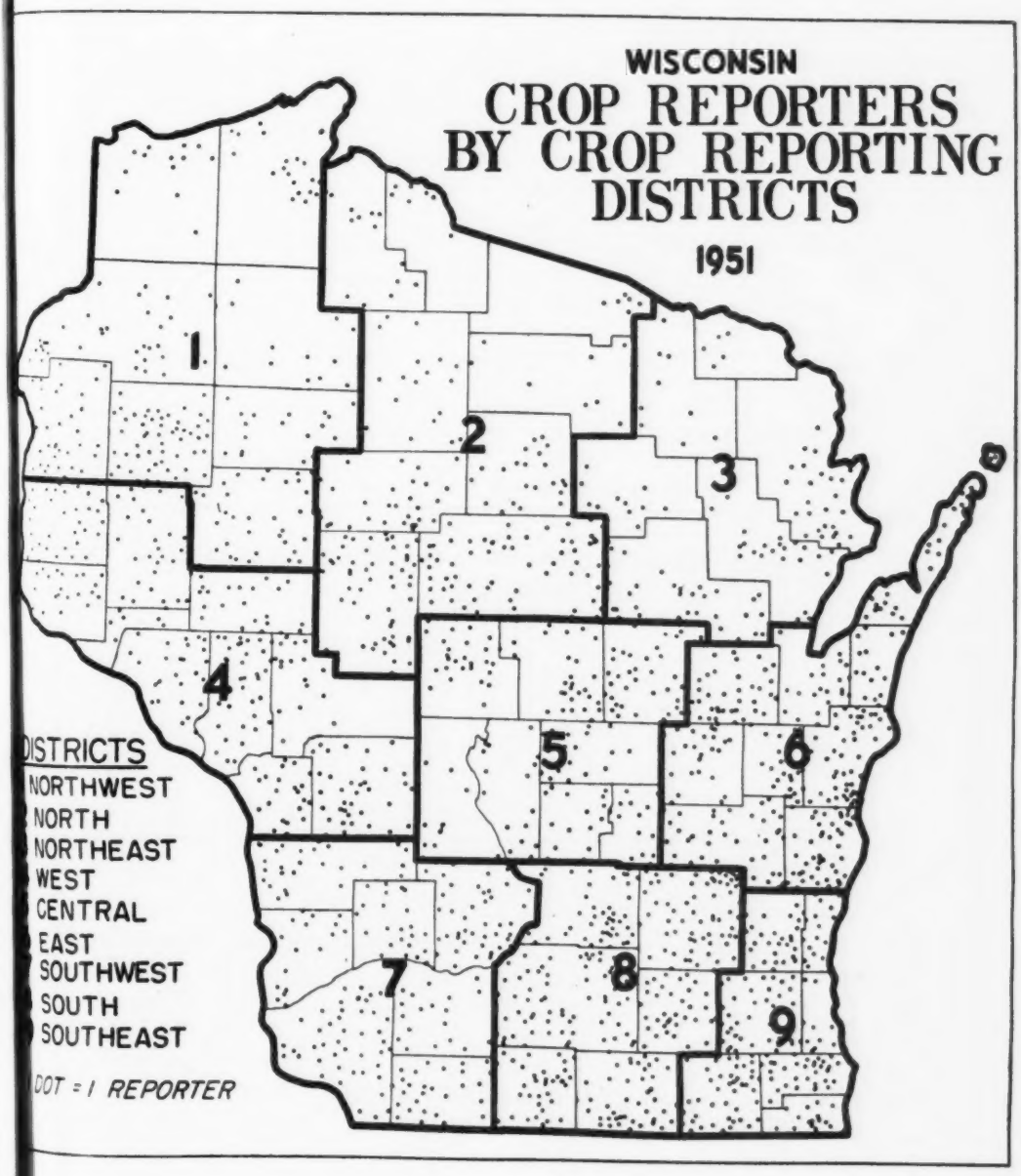

SCHEDULE OF REGULAR REPORTS
WISCONSIN
WISCONSIN
JANUARY
FEBRUARY
MARCH
APRIL
MAY
JUNE
JULY
AUGUST
SEPTEMBER
OCTOBER
NOVEMBER
DECEMBER
CROPS
GENERAL REPORTS
ACREAGE SURVEYS
ASSESSORS
TRUCK CROPS
FRUIT
TOBACCO
GRAINS
SEEDS
POTATOES
OTHER CROPS
SPECIALS
LIVESTOCK
GENERAL SURVEYS
FEEDER
POULTRY
HATCHERY
SLAUGHTER
OTHER LIVESTOCK
DAIRY
GENERAL
MANUFACTURES
BUTTER & CHEESE EST.
OTHER DAIRY
PRICES
DAIRY
RECEIVED
PAID
OTHER
COUNTY EST & REPORTS
OTHER DIVISIONS
ADMINISTRATIVE

Figure 2.


WISCONSIN
CROP REPORTERS BY CROP REPORTING DISTRICTS
1951
1
2
3
4
5
6
7
8
9
DISTRICTS
NORTHWEST
NORTH
NORTHEAST
WEST
CENTRAL
EAST
SOUTHWEST
SOUTH
SOUTHEAST
DOT = 1 REPORTER

the universe more or less uniformly while particular items are distributed ununiformly. From the standpoint of tabulation this presents a basic problem. To deal with it, a system of geographic stratification and weighting by Crop Reporting Districts or sometimes by counties, is employed.[1]

The crop reporting districts represent a subdivision of States along county lines. They provide a means of organizing and processing data by areas smaller than States but larger than counties. If the State is somewhat rectangular in shape, it is usually divided into nine districts numbered from the northwest, as is shown in the map of Wisconsin Crop Reporting Districts, in figure 2. In Wisconsin the districts are unequal in area, but they have an average of nearly eight counties each. To some degree the agriculture in a crop reporting district has homogeneity; that is, there is respectively less variation within the districts than there is in the State as a whole. The convenience of tabulating in this pattern is great, and it provides a basis for the application of district weights. This system of arrangement for tabulating and weighting by districts has developed gradually and after other ways were tried.[2]

THE DISTRIBUTION OF IMPORTANT AGRICULTURAL ITEMS IN WISCONSIN BY CROP REPORTING DISTRICTS *

(Percentages of State total in each district)

District	No. of farms %	Land in farms %	Corn %	Oats %	Barley %	Winter wheat %	Spring wheat %	Rye %	Potatoes %	Cattle %	Hogs %	Sheep %	Chickens %
1.....	12	12	8	8	2	6	2	4	6	10	2	8	7
2.....	12	12	4	8	2	4	3	3	16	10	3	5	6
3.....	7	7	4	5	2	6	5	2	23	6	3	4	4
4.....	13	15	15	17	8	18	17	23	6	14	13	21	18
6.....	9	11	9	8	3	6	10	53	22	8	6	8	9
9.....	15	11	11	18	44	8	21	3	8	15	10	6	15
7.....	11	14	16	12	2	7	8	5	5	15	28	23	13
8.....	13	12	23	16	19	14	20	5	5	15	29	17	18
9.....	8	6	10	8	18	31	14	2	9	7	6	8	10
	100	100	100	100	100	100	100	100	100	100	100	100	100

* The percentages of farms, land in farms, cattle, hogs, and sheep are computed from the Census of 1950. Percentages of crop acreages and chickens are computed from assessors' reports for 1950 and 1951.

When a quantity of mailed schedules from reporters has been returned they are first sorted geographically, usually by counties. The counties are then grouped alphabetically by crop reporting districts. If editing of the schedule before listing is necessary, it can be done at this time because the examination of the schedules is easier when they are grouped by counties. If identical comparisons with the report from a previous year are to be made, the schedules are also arranged alphabetically by counties.

[1] For a map showing the Crop Reporting Districts in all States, see *The Crop and Livestock Reporting Service of the United States.* Washington, D.C., 1933. U.S. Department of Agriculture, Miscellaneous Publication No. 171, p. 10.

[2] "A Closeup View of the Development of Agricultural Statistics from 1900 to 1920," by Nat C. Murray, *Journal of Farm Economics,* vol. XXI, No. 4, November 1939, p. 712.

Listing the data

Usually the next problem in handling survey material is that of transcribing the data onto listing sheets in the geographic stratification above mentioned. Once listed, the data can be further examined and edited. For this purpose standard large sheets, which accommodate all of the questions on a particular survey with headings at the top and spaces down the side for names of reporters, are used. A quality of paper which takes ink well is necessary, and it should be properly ruled so as to facilitate the listing of data. The standard paper for this purpose printed for the United States Department of Agriculture in the Government Printing Office, has horizontal lines six to the inch from top to bottom with every fifth line a heavy one so as to provide guide lines across the sheet and to facilitate counting the number of reports listed. The vertical rules which provide columns for the figures are spaced seven to the inch and grouped in three with a red line following two blue ones so as to make it easier to keep data listed in proper columns. Spaces in the vertical columns can be left under the headings in sufficient number to accommodate the data being listed. If the answers are in small numbers only one column of three spaces will suffice. If the numbers run larger two or more columns of three spaces each can be used. Red rules for headings on the sheet are also provided. Both sides of the paper are ruled identically so that by using the two sides the bulk of the sheets for a tabulation is reduced by about one half. While other listing forms are used for special purposes the bulk of the work is done on these standardized sheets on which headings may be entered by various methods, e.g., printing, pasting on the trimmed question items from schedules, ditto duplication, and handwriting.

Workers who do the listing must transcribe the data accurately from the schedules into the spaces under proper headings on the listing sheet. Decimal figures usually require special care in the form of extra space and/or of using one of the vertical lines for a decimal point. When fractions not in decimals are reported, they can be converted if necessary. Workers need to transcribe the data legibly and neatly so as to avoid introducing errors.[3] They should also known what to include and what to exclude; this requires some knowledge of the data to be listed, or detailed instructions must be provided. Furthermore, it is helpful if the listing clerks have sufficient knowledge of the data to recognize obvious errors or doubtful figures and to mark them in pencil so that they are noted by editors who review the material before it is summarized. If the listing is not carefully done, it is easy to introduce errors in transcription which did not exist in the original data. It is often possible to include special columns on the tabulation scheme which provide check totals or ratios which are valuable in controlling errors and balancing results.

[3] Tabulation is a recognized source of error. See "On Errors in Surveys," by W. Edwards Deming. *American Sociological Review*, vol. IX, No. 4, August 1944, p. 359-369. Spanish translation published in *Estadística*, No. 21, December 1948, p. 493-504, and No. 22, March 1949, p. 84-91.

Editing the listed data

After data have been transferred to listing sheets from the original schedules they are reviewed by an editor who checks for errors and omissions. When numbers are incorrectly recorded and where errors are large an editor can usually detect them. Many small errors obviously cannot be detected but often these compensate to some degree. Most of the larger errors can be observed by the editor and either eliminated or corrected. Frequently reporters misunderstand questions and supply data which are obviously incorrect. For instance, the units in which reports are made may be misunderstood. Sometimes figures are placed in the wrong columns. While this can usually be detected, the editor has the problem of watching for this kind of error. In some types of data, such as prices, there is likely to be a definite bias in one direction. For example, it is well known that price reports more often run too high than too low. Quotations are more likely to be for higher grades of a commodity than for the lower or average grades. As a result in editing price data more high reports than low ones are eliminated. Errors in classes of livestock are frequent. In an effort to classify animal numbers by age and sex groups, for example, it is easy for a respondent to report animals in the wrong group. Also, the same animals may be duplicated in two groups. This can be in part overcome by asking a respondent to report the total number of a species of animal and then provide the data for the different classes of animals that make up the total. Even so, errors in classification are common, and the matter of balancing the numbers in the different classes making up the total is an editing problem.

In editing and tabulating schedules reporting dairy products, the problem of checking proper input and output relations is common. If correctly reported, the products made or shipped by a plant should account for the milk and butterfat received. Often the two fail to balance. The editor then has the problem of finding the source of difference—which may be in various places—both in receipts and in disposition. Not infrequently products made are listed in the wrong category and if a check on the history of a plant does not help, correspondence may be necessary to clear up the error.

Preparing summaries

After data are listd and edited, there remains the problem of preparing summaries. The listed data may be totaled by counties and districts as needed. To save time this is commonly done on comptometers by experienced operators. Checking of additions by a second operator is desirable to avoid machine errors. Knowing which forms and equipment to use is a part of the clerical training necessary in rapid tabulation of successive sample surveys.

Totals for the subdivisions of a State are transferred to summary sheets where the results for the different subdivisions can be examined and compared—and weighted. A standard summary sheet for each State

is printed in the Government Printing Office. It has the counties grouped by districts printed in columns both on the left and right sides, with spaces set off in red for district and State totals, and blue lines across the sheet for each unit of area. Except for wider spaces used with district and State totals, the horizontal rules on the sheets are six lines to the inch, as is the case with standard listing sheets. Vertical red rules, however, are spaced slightly over a half inch apart and there are two blue rules between the red. While the spaces are designed to accommodate three or four figures, they can take as many as six figures. Successive columns are used for related items.

To keep commodity data together, such standard summary sheets usually carry summaries for one commodity for an entire year. Where data on an item are collected at intervals during the year, the summaries are added to the commodity summary sheet as they are completed. For special purposes other summary forms are sometimes used, but the bulk of the data are first assembled for the State on the standard summary sheets.

For forwarding summaries to the Federal office in Washington various special forms are used. Commonly, these are a standard sheet to give area data on reports such as regular monthly crop reports, and a special State summary similar to the survey schedule to provide convenient State totals for the various schedule items. On acreage and livestock and price inquiries special summary sheets by districts to accommodate all the items in a survey are used. These provide spaces for the number of reports, the sums, the averages, and also places for weights and weight extensions. Thus for such surveys the detail of the entire survey in summary form is included by districts for the national files. Special inquiries frequently have special summary sheets provided on which data are recorded for the national files.

Organizing the material for publication

In addition to bringing summaries together from the tabulation of collected data, the problem of organizing the material for publication has many angles. For well-established data series these are well worked out in the various reports available from Federal and State statistical offices in agriculture. Current tables giving the most recent data in comparison with one or more previous reports for the nation and the State are common. Much worthwhile detail is omitted because of lack of space and the fact that for much current material breakdowns for areas smaller than state are not required. Tabulations for publication for national and State data have been well worked out over the years, but within States much remains to be done. However, this subject is too large to be considered in this brief paper.

* * *

PROBLEMS OF INTERNATIONAL COMPARABILITY IN AGRICULTURAL STATISTICS*

RESUMEN

Este artículo trata sobre algunos problemas de comparabilidad internacional en las series estadístico-agropecuarias. Estos problemas tienen origen en muchas causas: Falta de acuerdo en "qué es y qué no es agricultura"; carencia en muchos países de series estadísticas relativas a la agricultura, o insuficiencia en cuanto a alcance o cobertura de esas series, donde existen; diversidad de períodos de labranza y de producción de la agricultura, que hacen difícil precisar un "año agrícola" general; variación en cuanto a la frecuencia de inventarios y en cuanto a fases específicas de la producción ganadera; variación de conceptos referentes a cada serie estadística, de factores geográficos y de instituciones; disparidad de pesas y medidas; etc.

A pesar de estas dificultades se han logrado progresos significativos hacia la comparabilidad internacional de las estadísticas agropecuarias, los cuales han sido, en gran parte, resultado de la exposición de deficiencias y defectos que se han hecho evidentes con el análisis de series agropecuarias y de las presiones que para remediar unos y otras han ejercido quienes las utilizan. El proceso de mejoramiento continuará, y dependerá en gran parte de los empeños vigorosos de investigación en este campo y del empleo final de las estadísticas, que destaquen las dificultades y problemas que deben ser solucionados en escala nacional e internacional. Como medidas específicas para acelerar este mejoramiento se mencionan las siguientes en este artículo: (1) Acuerdo sobre definiciones, alcance y conceptos de series esenciales relacionadas con productos individuales; (2) utilización, por parte de los estadísticos y economistas, de información estadística agropecuaria en la elaboración de estadísticas derivadas; (3) revisión autocrítica de los servicios nacionales de estadística agropecuaria; y (4) establecimiento de listas mínimas o ampliadas de series necesarias para fines internacionales, como se hizo en los programas del censo agropecuario de FAO y IASI.

INTRODUCTION

Many of the problems of comparability in agricultural statistics have their counterparts or parallel in other fields. These include such matters as units of measurement, conversion factors, definitions, selection of base periods, weighting systems, and many others. Long range work directed to increasing uniformity in weights and measures, for example, contributes immensely to comparability in any one field of statistics. Similarly, activities in coordinating statistical programs in trade, in industry generally, and in commodities have provided a working basis for agreement

* Prepared by the Markets and Economics Service of the Department of Fisheries of Canada in collaboration with the Inter American Statistical Institute, for use as a working document (IASI doc. 1228a) of the II Session of the Committee on Improvement of National Statistics, held in Ottawa, Canada, September 29 — October 10, 1952.

among nations leading in turn to modification of related national statistical series. For example, international agreement on a trade classification for a particular commodity has been effective in leading to appropriate changes in national statistical series on marketing, prices, and primary production for that commodity.

Although considerable progress has been made, the experience of attempting to bring together a statistical series for even one of the major commodities is bound to impress the statistician with the amount of work still to be done to achieve satisfactory standards of international comparability. There is little need to dwell at length on the characteristics of agriculture that complicate attainment of what most statisticians would accept as ideal in this field. Perhaps a few examples will suffice. The fact that it is a "continuous process industry" requires arbitrary decisions for cut-off dates. However, since the production process in many cases is governed by climatic conditions, arbitrary cut-off dates for some areas and commodities may satisfy an accounting requirement but may be unrealistic and useless in practical work. The great diversity in such an item as "number of animals" in respect to size, yield of product, and other features, is another example of the difficulty in attaining comparability.

The greatest problem lies right at the opening of the subject: "What is and what is not agriculture?" The field encompassed by the term agriculture varies from country to country. This in itself is an obstacle, but the subject is even further complicated by varying concepts of what is or should be included in agricultural statistics. In some countries, agricultural statistics include series on crop production only, and series on animal production or animal husbandry are collected, treated, and published quite separately. In other countries they may include statistics on the primary production phases only, and farm processing operations are considered as a separate industry, although carried on by the same individuals in more or less the same economic units. In some countries the field of agricultural statistics may include all related statistics such as prices, farm income, trade, statistics on rural sociology, etc. while yet in others these may form part of the general statistical work or even be neglected.

REVIEW OF ACHIEVEMENTS

It has been suggested that much has been towards international comparability of agricultural statistics. A review of this achievement indicates that progress varies widely among individual commodities. Generally the commodities in which greatest progress has occurred are those of commercial importance, particularly in international trade. This development of statistical information in commodities has been accelerated by demands of users. At an early stage the demands came largely from commercial traders, exporters, processors and importers, who required

information for marketing purposes. The earliest international commodity statistics or crop reporting programs were developed by commercial organizations and particularly grain exchanges. These developments in turn led to the introduction of improvement in national agricultural reporting systems and gradually statistical series evolved on a basis which provided a greater degree of comparability. Examples of developments of this kind were in commodities such as wheat, sugar, cotton, and wool. Latterly, the assembling of statistical information on commodities and the promotion of comparability through development of concepts, measures, grades and time periods, have been achieved through international commodity organizations. The intensive use of commodity statistics has been a major factor leading to their improvement through exposing defects and deficiencies, series by series and country by country.

The major shortcoming in this early development was the limited coverage of these international statistical series. In the main they were restricted to major producing, exporting or importing countries, and in many cases in these countries, only to commercial production. These statistical series were developed for the primary purpose of solving commercial problems and as such did not usually include the noncommercial or self-sufficient type of production.

Subsequently other uses for international statistics have broadened the coverage and the scope of commodity statistics and although information is still short of that needed to fill all requirements it is a long way ahead of that available 30 or 40 years ago. In more recent years newer and broader uses of statistical information on food and agriculture have been instrumental in focusing attention on the deficiencies in existing systems of national agricultural statistics. Among these, national food and fiber consumption studies expanded and developed during and since World War II, have perhaps been foremost. The statistical drill in working through these involves a thorough survey of production and utilization data, the latter including trade, stocks or inventories and nonfood uses for multi-use commodities. The work in this field of the Food and Agriculture Organization of the United Nations (FAO) and the Office of Foreign Agricultural Relations of the United States Department of Agriculture, has been a stimulant to national statistical agencies in many countries.

But the attainment of reasonably satisfactory end-product figures from food and fiber balance sheets would not by itself indicate that a country's agricultural statistics were complete or internationally comparable. These balance sheets require use of physical data, and then only data necessary to satisfy the factors in the equation and produce the result. Important series and related data may receive only scant attention or none at all. Because of the particular arrangement of a country's statistical series for agriculture it might be possible to estimate human food

availability without considering series related to other uses. Furthermore, as suggested above, the data used are in physical terms, and these balance sheet operations do not usually touch on the economic or value aspects.

In some countries the development or improvement of national income statistics has been a contributing factor to improvement in national agricultural statistics and hence to achievement of comparability internationally. National income statistics if developed through calculaton of the national product method involve rigorous examination of all estimates of production, utilization, and expenses of production in agriculture. In some of the more developed countries the work in national income statistics has been an important impelling force for the thorough examination of existing agricultural statistical series. And even in these countries investigations of this nature have caused embarrassment by revealing serious discrepancies.

SOME PROBLEMS AND GENERAL SUGGESTIONS FOR IMPROVEMENT

Although it is not intended to spell out in detail the obstacles to international comparability, series by series and country by country, some of the more important categories in which these fall will be mentioned.

Undoubtedly the greatest problem is the lack in many countries of statistical series related to agriculture. Obviously if the information is not available, comparison is not possible. A program for improvement must, therefore, to a large extent include the development of many new series of agricultural estimates in countries in which they are now unavailable.

The development of new series in these countries will provide an opportunity for work to be initiated along lines that will permit estimates comparable with those generally available for other countries. It may be easier to adopt prevailing standards in introducing new series than to modify long-established series to meet international needs.

Where series are available, the next most serious deficiency is in the coverage for each item. This was referred to before but its importance cannot be overstressed. In one country estimates may pertain to commercial production only while in another country estimates for the same item are all-inclusive. In marketing or utilization statistics, information available may in one case represent the complete supply, and yet in another country only part of the total marketings of the product.

Attempts to compare series from country to country are difficult because of the varying time periods of agricultural operations and production, the timing of each individual country's own statistical reporting service, and the time required for processing and publishing data. In some cases the agriculture season may be almost continuous while in other cases it is very definitely established by climate. This has given rise to many difficulties in tabulating agricultural statistics. The complication

of seasons would be difficult enough, but it is aggravated by other factors that have entered into the choice of time periods. These include such influences as administrative time periods (fiscal years), industrial operations, trade practices, and so forth. An illustration of accord in these matters is found in the agreed time period for a crop year in the present International Wheat Agreement. This marks a definite step forward in improving comparability of statistical series for an agricultural commodity.

The usefulness internationally of estimates of livestock numbers is considerably reduced by the varying periods at which the numbers are reported. There is not only variation in the frequency of the inventory, ranging from something less than quarterly to 10- or 20-year census periods, but also in the particular phase of livestock production referred to. In some countries estimates are made during the peak period when numbers of young animals are greatest; in other countries it may be at a low period when most of the stock has left the farms; while in some countries an attempt is made to take the inventory when numbers are at about a normal level. The time selected depends in part upon the purpose for which the statistical information is used. In the interest of international comparability it would be preferable to have estimates of numbers at a given time for all countries. But much would be achieved if each country maintained a consistent time period in its year-to-year reporting program.

The question of obtaining agreement on concepts pertaining to each series is complicated by the approach of individual technicians and the needs of each country. Geographic factors, social customs, habits, trade, and general economic policy of governments all have bearing on the specifications of each statistical series. Therefore, many and widely varying conditions have to be taken into account in establishing categories and classifications on an international basis of statistical series for agriculture.

An important contribution to immediate improvement in the comparability of agricultural statistics can be made at low cost and with a minimum expenditure of effort by statisticians in almost all countries. This contribution would be to provide more precise and careful definition of each statistical series and changes made in the series from time to time. Explanatory statements could be included in special publications or in regular releases conveying to the users of the statistics at least some general appreciation of their nature, the concepts involved, methods, and other pertinent information. This step may involve many difficulties; a beginning could be made however, with the less complex series.

It would be indeed most helpful if those responsible would carefully qualify the estimates for series, with particular reference to changes in description, quality of the product, coverage of the series, and especially to unusual interruptions or factors affecting the quality of the statistics themselves. Frequently sharp differences occur in international statistical series and the international user must perforce spend considerable time to ascertain the reasons for the divergence.

Many difficulties occur because of the failure of countries to state clearly in their official reports the specific nature of the estimates—that is, whether they are forecasts, intentions, actual results, or the oft-quoted "guesstimates"—and also the time period covered by the estimates or the specific date on which the estimates were made. Suggestions have been made that there should be agreement on definition of terminology used, such as forecasts, intentions, actual yields, and estimates. In many countries, however, the character of the estimates released shades from a hazy "intentions" or "forecast" figure, into a final or actual figure through phases of the production process.

Some national agricultural series are issued containing more or less constant biases and deficiencies. These may not be apparent to the international user or the outsider and may be the cause of considerable annoyance when discovered. Some countries apply correction factors to data before making them available, while other countries qualify their statistics to indicate limitations. It is to be emphasized that although adjustments of national estimates should be objective, they have too frequently been made on a subjective basis.

It has been suggested that existing agricultural statistics for all countries should be catalogued as a beginning of a program to improve the international comparability of agricultural statistics. This proposal will serve its most useful purpose if the cataloguing process involves a critical appraisal of each series. The appraisal would be a long and involved task, but beginnings have been made already, in reviews undertaken by FAO and by the Inter American Statistical Institute (IASI).

While it would be feasible to set up an extensive and detailed list of requirements for agricultural statistical series the fulfillment of which might be a future goal, it is most likely that the desired ends will be achieved through attacking each problem in detail as it arises, having regard for the whole. As suggested, lack of information on particular commodities in many countries is a major handicap. Attempting to carry out a list of the ideal or ultimate may lead to discouragement and frustration. A piece-meal approach on the basis of individual commodities or groups of commodities, especially those that are of vital importance to the countries concerned, may be more fruitful.

The agricultural census itself offers considerable scope for improvement in comparability. In this connection, the work of FAO in respect to the 1950 world agricultural census program—and of IASI in the application of this program in the Western Hemisphere—has contributed to this objective. Recognizing the varying range of resources of statistics and equipment available to each country and the inherent difficulties of carrying out statistical operations over widely varying regions of the world, both organizations offered proposals not only for taking the census but also for tabulating the material from it. The world program, although by no means adhered to throughout, certainly promises a very great step

towards international comparability in this cross section of world agriculture at mid-century. Furthermore, insofar as many countries base their current estimating system for agricultural statistics on a census, this program, as far as it has been followed, certainly should lead to increased comparability of national series. It is understood that some countries are modifying their existing system of current statistics to fit this pattern while other countries that only now are developing a system of agricultural statistics will follow as closely as possible the details as laid down in the census program. It perhaps might be useful to suggest that some recommendations concerning this point could emerge from sessions of COINS, and that the appropriate organizations might receive direction to follow up the work of the census program by sponsoring the modification and development of the basic series of agricultural statistics along the lines of the 1950 census plan.

In striving for comparability care must be exercised lest the very progress in that direction destroy the usefulness of a good deal of information that may not be entirely comparable from country to country. Comparability is relative, and the optimum must be a compromise between the present-day needs of the users and the willingness of countries to submerge the identities of some of their statistical series. The desirability of retaining and bringing out the differences that characterize the agricultural economy from country to country is perhaps in some senses just as important as the progress toward international comparability. A high degree of comparability may lead to obscurity of important facts and to a mediocrity and lack of color that may destroy an important purpose of work in international statistics, namely, betterment of the international food and agricultural situation. Plans and programs developed by international agencies must be flexible and elastic enough to permit national differences to emerge from statistical categories and classifications.

SUGGESTIONS FOR ACTION

It is again emphasized that in the past, progress towards comparability has been the result largely of the exposition of deficiencies and defects arising from use of agricultural statistical series.

From this it would follow that future progress will be dependent in a large measure on the vigorous pursuit of research and end-use activities that bring to light the difficulties and problems to be remedied nationally and internationally.

The process of improvement of international comparability of agricultural statistics will continue. Possibly it will be slow by some standards but perhaps this will be a characteristic of merit. It can proceed along many lines and directions. A few approaches are suggested through which progress can be made. The importance of the respective approaches will vary with the statistical series and with the particular conditions of each country.

a. Consideration of each commodity individually and working through commodity agreements or other means of collaboration to establish standards and agree on definitions, scope, and concepts for essential series covering each commodity.

b. Use of statistical information by national and international statisticians and economists in the preparation of derived statistics, such as food balance sheets, farm income statements, and index numbers of agricultural prices, as a means of revealing shortcomings and defects of existing agricultural statistical series.

c. Self-assessment on the part of national agricultural statistical services, with help from outside when the technical facilities within the country are inadequate.

d. Establishment of minimum lists or series for international purposes, as in the agricultural census programs of FAO and IASI.

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ELEMENTS OF AN EFFECTIVE INTER-AMERICAN TRAINING PROGRAM IN AGRICULTURAL STATISTICS

By GERTRUDE COX, U.S.A.*

RESUMEN

Un programa interamericano de entrenamiento en estadísticas agropecuarias debería incluir, como base mínima, cuatro objetivos específicos: (1) Promoción del uso de técnicas estadísticas eficientes en todos los campos de investigación agropecuaria; (2) fomento de una mejor calidad y mayor disponibilidad de programas estadísticos de entrenamiento, investigación y servicios de consulta; (3) suministro de asistencia en el planeamiento de investigaciones y en el diseño de experimentos; (4) mejoramiento de la estadística mediante el descubrimiento de nuevas técnicas a través de investigaciones teóricas.

Para atender a necesidades conocidas se formulan en este artículo las siguientes sugerencias, entre otras: (a) Se hace necesario un informe que dé cuenta de los recursos existentes, como base para planear un programa de entrenamiento comprensivo; (b) aquellas universidades que ofrecen cursos avanzados de estadística deben tener un grupo estadístico central de coordinación; (c) debe existir un número limitado de escuelas que imparta instrucción avanzada en teoría estadística, pero *todas* las escuelas deberían tener cursos básicos de estadística aceptables para *todos* los grupos de investigación; (d) aún cuando el desarrollo de la ciencia estadística es, en este momento, más urgente que la estandarización, sin embargo existen varias instituciones en el campo de la estadística agropecuaria que ha desarrollado sus programas a tal nivel que se hace aconsejable un cierto grado de estandarización; (e) para atender a las necesidades de consulta o asesoramiento podría formarse un comité que incluya expertos de los varios campos de aplicación de la estadística agropecuaria, el cual podría visitar las escuelas y hacer recomendaciones, o proporcionar servicios de consulta a los investigadores.

Una idea que se destaca a través de este artículo es la de que la llave de un programa interamericano de estadística efectivo reside en la planeación cooperativa, incluyendo el intercambio de información y experiencias, bien que se trate de un programa general o especializado, o de actividades operacionales o de entrenamiento. Asumiendo que se disponga de un mecanismo de coordinación apropiado, cada país, cada institución de educación académica superior, y cada organismo estadístico puede contribuir en alguna forma a un programa bien estructurado de entrenamiento en estadística agropecuaria. La investigación en forma cooperativa es, por ejemplo, una de los medios más efectivos de fomentar el uso de instrumentos estadísticos en la investigación agrícola y de estimular mayor meditación sobre este campo.

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Introduction

In the American countries there exists a real appreciation of the value of statistics. Administrators and government officials are requesting help in securing population and crop estimates by means of census or survey methods. Research workers are eager for help in planning their experiments and in the evaluation and interpretation of the results.

During recent years, the urgent need for developing and improving the official national statistics in the Latin American countries has received the attention of various agencies. This effort is helping to complete the records so that the American countries can maintain complex statistical organizations which keep account of the number and welfare of their people. The special needs for agricultural censuses and the establishing of crop reporting and forecasting systems are a part of this effort. Reports on the training involved in developing these programs were presented recently in *Estadística*.

Along with the promotion and collection of descriptive statistics, consideration needs to be given to improvement of their comparability which is a part of the science of statistics. The descriptive statistics give facts about past or present conditions, while the function of statistical science is to guide the research worker in his drawing of conclusions from quantitative data, whether experimental or observational, on the basis of which predictions for the future are made. Statistical data are collected as a basis for making wise decisions on important questions of policy and scientific research.

After listing and evaluating the developments which have been made, it seems not only timely but desirable that a comprehensive coordinated program for the promotion and development of statistics in all the American countries be formulated and put into operation. It is time to explore the potentialities of an American expanded and coordinated statistical program of teaching, research, and consultant services in all aspects of statistics.

Objectives

An Inter-American training program for agricultural statistics should include at least four specific objectives:

1. Promotion of the use of efficient statistical techniques in all fields of agricultural research.
2. Development of a higher quality and a greater availability of teaching, research, and consulting services in statistics.

3. Provision of assistance in planning surveys and in designing experiments.
4. Advancement of statistics through the discovery of new techniques by theoretical investigations.

National and international agencies are helping to develop and provide statistical training and advice. The coordination of these programs would make a substantial foundation to which could be added the structure needed to complete a well integrated plan to cover these four objectives.

As stated above, under post-war activities, systems of descriptive statistics are being reorganized, strengthened, and improved. This improvement of national statistics along with an expansion of agricultural research and an increasing acceptance of statistics as the technology of the scientific methods requires a substantial and rapid increase in the number of trained and competent persons working in every phase of the production and utilization of statistics. Various universities, government agencies, and research centers in the American countries are seeking statisticians who have the personality and ability to direct statistical surveys and to organize statistical units.

To meet the demand for adequately trained statisticians some positive action is required along three lines: Training of personnel, developing consultant services, and engaging in research. After consideration of these three points, suggestions regarding methods of training will be given.

Training of personnel

As a basis for discussion of this problem of recruitment of competent statisticians let us consider the first two objectives of an inter-American program for agricultural statistics as given above, i.e., (1) promotion of the use of efficient statistical techniques in all fields of agricultural research, and (2) development of a higher quality and greater availability of teaching, research, and consulting services, in statistics.

A. *Types of training*. The meet these objectives, two types of training are essential.

1. *The training of research workers from fields other than statistics*. More scientists should be trained in statistics to enable them to help initiate and establish the best scientific methods and to help them to train the younger scientists in these methods. As these investigators attain high technical competence, good statistical methodology will be used more extensively than is done at present.

The research workers need training not only in general statistical principles, but they must know how to deal with the practical applications of these principles. Statistical training should help them understand the quantitative approach to problems and should lead them to objective and analytical thinking.

The personnel taking this type of training would include officers having good advanced training in a science and some specialization training or experience in the use of statistical techniques and probably a little instruction in higher mathematics. This group might include chiefs of sections of central agricultural bureaus, supervisors of each phase of the record collection and tabulation, and agricultural research workers.

2. *The training of professional statisticians.* There could be a discussion regarding which of these two types of training requires first or major consideration. Certainly, professional statisticians who can handle the consultant work and the teaching of statistics to research personnel are needed. These statisticians must have a knowledge of some field of application in addition to training in the theory and techniques of statistics. They need to learn also the art of applying statistical methodology to actual biological data as well as the art of working with people.

In most organizations dealing with records and data there are people well trained in some science who have the desire, the basic knowledge, and the ability to learn statistics. If given intensive statistical training, these people could serve as teachers and consultants to their co-workers.

The professional statisticians are those experts in statistical sampling who are concerned with evolving the sampling methods most suitable to agricultural problems, those analysts who evaluate assembled data, those specialists in agricultural experimentation who advise on the use of mathematical statistics in the planning and evaluation of experiments, and those who teach statistics.

B. *Types of courses.* How can we build a curriculum which will provide effectively the training needed? An evaluation of a survey of what is being done at those institutions which have statistical programs leads to the conclusion that three main types of courses are needed.

1. *Basic courses.* These courses should be designed to familiarize students with statistical ideas and the most commonly used tools. They should include both the theory and the methods of statistics. It is envisioned that three basic sequences (with algebra, with calculus, and with higher mathematics prerequisites) covering the same concepts may be required.

2. *Supporting methodology courses.* These courses are for research scholars in other sciences who want a practical working knowledge of statistics. They are designed to acquaint technicians in various agricultural branches with the more general types of sampling, design, and analytical procedures, and to give details regarding how to use statistical methodology when dealing with practical problems.

3. *Advanced courses.* Students preparing to teach, to develop statistical theory or to serve as consultants will need advanced courses in mathematics and in both the theory and method courses in statistics.

Developing consultant services

It is recognized that the quality of research is improving with more extensive use of statistical methods. At the universities and other research centers there already exists a desire among alert research workers for the consultant services which statisticians should give. These investigators know that statistical advice is most fruitful if it is secured in the original planning of their research.

The statistician who follows a project closely should be expected to render advice in the designing of experiments and surveys so that the data when secured will provide the maximum of information with the least expenditure of time, labor, and material. He should help in the analyses and interpretation of the data and in the preparation of the results for publication.

It is the statistician's duty to keep informed of the rapidly expanding knowledge of statistics and to make such information available to the users of statistics. This combination of a thorough knowledge of statistical theory and method along with adequate competence in the field of application requires that the consultant statistician be a person of substantial ability.

Engaging in research

In order to maintain a training and consulting program in statistics, it is essential that research in statistical theory and methodology be conducted. A close integration between theory and applications constitutes the best foundation for important advances in the science of statistics, as indicated in our fourth objective.

Research in theory forms the basis for new applications, which now touch every major branch of agricultural research. In turn, these applications reveal deficiencies in existing theory and suggest new and fruitful points of view for further theoretical developments.

One of the most effective ways of promoting the use of statistical tools in agricultural research and to stimulate more thinking, is by cooperative research. Regional interests exist in many fields, for instance in coffee research. Coffee is grown in several American countries, so if this group of research workers were brought together to formulate a regional master research plan in such a way that their work was a part of this plan, they could share experiences, capitalize on the special training of others, learn the aspects of cooperation and produce better results in less time.

Existing resources for training

Facilities in the different countries for the training of agricultural statisticians vary considerably and are far from adequate. There are numerous schools teaching some basic theoretical and methodology courses, and several of the larger universities can, and some are, giving advanced degrees in statistics.

Since it is agreed that there exists a shortage of adequately trained statisticians, there should be a survey and ultimate listing of places that could assist in this training work. Each institution should make an internal evaluation and report of its personnel, physical facilities, and willingness to assist. These reports would be used as a basis for the formulation of an integrated inter-American training program. It is possible that if the universities in the Americas combined and utilized efficiently their existing resources, they could double the production of statistically trained personnel. Probably there are statisticians whose abilities are not being utilized to the fullest extent. How can these be located and used?

Methods for training

There are several ways in which individuals, institutions, and operating agencies can assist with a training program in agricultural statistics. As suggestions, six methods are presented briefly.

1. *Regular university courses.* More agricultural colleges should be giving courses in statistics. Some of these schools should develp their program to the extent that they are qualified to give Master's and Doctor's degrees in statistics. This responsibility can be divided among schools so that one university might develop a training and consultant center in agricultural statistics while another school developed a center for training in business and economics statistics.

2. *Regional training centers.* At a few places regional training centers could be started to serve as a model program with their main objective to help train personnel to be able to develop similar centers in other countries. In general, the level of instruction for regional training centers should be relatively high, since at these places would be trained the leaders for other countries. After five years, the regional training centers would become strong local programs. Such efforts should receive regional support while giving intensive regular university courses in both theory and methodology.

The universities, especially those which have, or are developing, statistics departments should promote summer sessions, short courses, and conferences.

3. *Summer sessions.* The regular university courses should be given from time to time as intensive summer courses. Visiting professors can be secured to assist the local staff and to provide instruction in specialized fields of statistical methodology or theory. The summer work enables persons who cannot get away from their work during the academic year to take regular courses.

4. *Short courses.* These courses are usually three months in length. They are designed to give specialized training to fit the needs of the group. The courses should be planned to emphasize the applications of statistical methods to the problems of common concern to the group selected to attend. Outstanding authorities should be secured to give these courses. This would enable the local staff members to profit from the course. They can carry on the work after the specialists leave. The effectiveness of these short courses depends upon intensive exercises in working problems and upon the future availability of consultants to answer questions encountered later when the students try to apply their training.

5. *Conferences.* For shorter periods, work conferences of a local, national or regional nature should be held for invited research investigators especially those who have closely related subject fields. At these conferences the research problems of those in attendance should be discussed and evaluated. Interwoven with these discussions, an appropriate series of instructional lectures can be given. This is a stimulating and helpful way of getting statistical information and instruction to the research worker. The whole conference should be geared to the level of statistical ability of those present. Conferences for professional statisticians should be held to give supplementary information on the latest advances in modern techniques for compiling and evaluating agricultural data.

It is being assumed that whenever possible it would be desirable to have summer sessions, short courses, and conferences connected with the university. Supplementing these programs, there is the valuable training and experience to be gained by working with an operating agency.

6. *Specialized training courses.* The individuals wishing to learn about the applications of statistics in an operating agency, would spend a period of time actually helping with the data-producing. They would be allowed to see how the whole sequence of schedule making, data collecting, and report writing is done. This gives the opportunity for the students to work with experienced personnel.

At an office of agricultural statistics, they would learn about the organization and preparation of estimates and forecasts from samples; or at an experiment station, they would help do research in order to see how statistical methods are being used for improving experimentation. These specialized training courses should emphasize by actual practice how statistical methodology is adapted to real situations.

Problems

An inter-American program in agricultural statistics involves the training of teachers, providing consultant services, and promoting research. Some of the methods for training have been discussed. There remain other problems, a few of which are presented for consideration.

1. *Student selection*. For regular graduate training the selection of students is fairly well defined. However, the selection of qualified trainees to attend special courses should be given more consideration. What is the prerequisite course work needed and what are the other qualifications required for the students to secure maximum benefits from the work being presented? More thought should be given to the relative economic value of sending the students to specialized courses or to a regular training center for degree work.

To be a leader in teaching, research or statistical consultant work, a person needs to be willing to do routine work; he must have the ability to do logical thinking, to express his thoughts and to cooperate. These are essential qualifications to supplement his previous training in mathematics and other sciences.

2. *Adaptation of training*. The students feel that the adaptation to their local situations of the knowledge secured is one of the major difficulties. The basic concepts of statistics are the same for all fields of application regardless of countries. However, as the statistical methodologies are presented by means of both survey and experimental data, it would be much better if the teachers were familiar with the local problems of the students.

This raises the question whether the specialized courses should be given in each country, in regions or at few training centers. Consideration needs to be given to the difficulties encountered when students are confronted with new ideas presented in a foreign language.

3. *Fellowships and scholarships*. There are several sources of funds available for individuals to secure training in statistics. Foreign fellowships are being granted for the training of professional agricultural statisticians who are in countries where this work is not available. Many of the Latin-American universities have good course work in mathematics. A student can take his mathematics at his local university, then secure a fellowship for regular graduate work at a training center which gives courses in methodology. Fellowships are available for professional personnel to attend short courses, conferences or the specialized training courses.

To be able to grant these fellowships for statistical training intelligently, and so as to meet efficiently the needs of the individual and his country, a list of the facilities and types of training offered at those universities qualified to give work in agricultural statistics should be available.

Other problems could be listed, especially in connection with long-range and cooperative planning—problems such as availability of teaching material in different languages, and local library facilities. Eventually, training materials must be available in the language of each country so that statistical methods and concepts become an integral and natural part of the programs of agricultural statistics offices and experiment stations.

Recommendations

Only a few of the elements of an inter-American program in statistics, with special attention to agriculture, have been given. In view of the extent and diversity of this program, a few recommendations or suggestions will be emphasized.

As previously suggested, a *report of existing resources* would give the foundation upon which to build a plan for training the technical and professional personnel required to provide each country with statistical services.

How should our resources in agricultural statistics be used and strengthened? No single type of program will or should work in all countries. However, all of the American countries seem to have an inadequate supply of professional statisticians. It is recommended that those universities which are offering graduate courses in statistics should have a central statistical group, such as an inter-departmental committee or a department of statistics. The effectiveness of such a group is directly related to the ability of its staff members to work with the people whom they must serve. It must be recognized that, in starting a coordinated statistical program in any organization, the willingness of the statisticians to cooperate may be a more important qualification than profound statistical knowledge.

There should be a limited number of schools giving advanced work in statistical theory, but *every* school should develop basic statistics courses acceptable for *all* research groups. These courses should be taught by mature teachers who have a sound background in statistical theory and methods.

At this stage, development of the science of statistics is more urgent than standardization. Yet, in the field of agricultural statistics, several institutions have developed their programs to the point where some standardization and coordination is advisable. Institutions planning improved teaching programs should benefit from the experiences of those schools which have been giving courses in agricultural statistics. How can this be done? If a coordinated and cooperative program is planned, experienced teachers might be willing to spend some time assisting with the planning and initiating of programs in other countries.

It seems advisable, as plans are made, to consider promoting a certain amount of specialization in order to endeavor to balance the total training program and to avoid unnecessary duplications. Each country, every institutions, and all the statistical offices can contribute to a well planned program in agricultural statistics.

To meet the need for consultant services, a panel which would include experts in the various fields of application of statistics, might be formed. If an administrator of a university wished advice regarding the organization details of its statistical program, a committee or individual from the

panel could be called upon to visit the school, study the local situation, and make recommendations. Research workers would know that they could call upon panel members for advice.

Regional groups or countries should develop their plans for both their present and near future needs for statistical training and services, these plans to be combined and coordinated into an effective inter-American program. The Inter American Statistical Institute, for example, is at present performing valuable service as a stimulating and coordinating agency.

A bulletin to provide for the transmitting of current information would be a valuable contribution for the use of students, research personnel, and teachers. Announcements of special meetings, seminars, short courses, and information regarding existing training centers are not distributed extensively enough at the present time.

It is realized that most of the ideas presented in this article are not new. These thoughts have been discussed frequently at national, regional, and international sessions. Programs are being formulated, and regional training centers are in operation. It should be emphasized again that basic training in statistics is the same whether one is concerned with descriptive or experimental data. Any plans for agricultural statistics should be imbedded in a master plan for training in statistics.

Cooperative planning which includes the sharing of information and experiences is the key to an efficient and effective inter-American program in statistics.

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INSTITUTE AFFAIRS — ACTIVIDADES DEL INSTITUTO

(Source: Secretariat—Fuente: Secretaría)

COMING ELECTION OF IASI CONSTITUENT MEMBERS

The fifth election of constituent members of the Inter American Statistical Institute will be held within the 6-month period following January 26, 1953, in accordance with the provisions of article II, section 4, of the Statutes. For this purpose, nomination of elegible and appropriate candidates are being requested of the present constituent members.

The schedule for successive steps in the election process will be:

January 26, 1953: Nomination forms will be mailed by the Secretariat to the present constituent members, with blank forms for up-to-date biographical information.

April 15, 1953: Closing date for receipt in the Secretariat of signed nomination forms and information on proposed candidates.

May 15, 1953: Voting ballots will be mailed to constituent members, together with names and information on candidates.

June 15, 1953: Closing date for receipt of voting ballots in Secretariat.

July 24, 1953: Notice of election results will be mailed to all old and new constituent members.

To be eligible for membership, candidates must be citizens or residents of countries of the Western Hemisphere. The total number of constituent members from any one country may not exceed 15. (Non citizens, resident in nations of the Western Hemisphere, are not allocated to national quotas.) A nomination form, signed by three constituent members of the Institute, together with abbreviated biographical information, must be submitted for each candidate. Members are asked to give special consideration to the possible nomination of candidates from countries not yet represented in the Institute, and from countries which at present have a disproportionately small representation.

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PROXIMA ELECCION DE MIEMBROS TITULARES DE IASI

La quinta elección de miembros titulares del Instituto Interamericano de Estadística tendrá lugar dentro de los seis meses siguientes al 26 de enero de 1953, de acuerdo con lo provisto por el artículo II, sección 4, de los Estatutos. Con este fin, se han solicitado a los miembros titulares proposiciones de candidatos elegibles y apropiados.

El plan para las etapas del proceso de la elección será el siguiente:

Enero 26, 1953: La Secretaría de IASI enviará los formularios de proposición de candidatos a los miembros titulares, con formas en blanco para poner al día la información biográfica.

Abril 15, 1953: Ultimo día hábil para el recibo en la Secretaría de las proposiciones (firmadas) e información sobre los candidatos.

Mayo 15, 1953: Se enviarán a los miembros titulares las boletas de votación, junto con los nombres e información sobre los candidatos.

Junio, 15, 1953: Ultimo día hábil para el recibo en la Secretaría de las boletas de votación.

Julio 24, 1953: Se enviará una comunicación a los antiguos y a los nuevos miembros titulares sobre los resultados de la elección.

Para ser elegible como miembro titular, el candidato debe ser ciudadano o residente de una nación del Hemispherio Occidental. El total de miembros titulares de un país no puede exceder de 15. (Los no ciudadanos americanos, residentes en naciones del Hemisferio Occidental, no serán asignados a las cuotas nacionales.) Por cada candidato debe remitirse una forma de proposición firmada por tres miembros titulares del Instituto, junto con una breve información biográfica. Se pide a los miembros que concedan especial consideración a las proposiciones de candidatos de países aún no representados en el Instituto, y de países que tienen un número de miembros desproporcionadamente pequeño.

CONSULTATIVE STATUS FOR IASI IN UN

In May 1952 consultative status was granted to the Inter American Statistical Institute by the Economic and Social Council of the United Nations. The Institute was placed in the "B category" reserved to "organizations which have a special competence in, and are concerned specifically with, only a few of the fields of activity covered by the Council."

The deliberations of the Statistical Commission and the Population Commission of the United Nations are of particular interest to IASI, since it is in the meetings of these bodies that worldwide standards in statistical practices are largely determined. As an accredited observer the IASI representative in the future will be able to audit and at times introduce Institute viewpoints into the discussions.

During the early years of its existence the Institute found it inexpedient to apply for consultative status with the United Nations, due to uncertainties involved with its own structure and relationships with the nations. These difficulties cleared up with the consummation of the agreement of affiliation between the Institute and the Organization of

American States. It is with genuine satisfaction that IASI welcomes a formalization of this consultative relationship, which heretofore has existed in large measure through informal and cooperative working relationships between the staff of the UN Statistical Office and Population Division, and the Secretariat of the Institute. (Source: H.L.D., Washington, D.C.).

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CARACTER CONSULTIVO DE IASI EN LAS NACIONES UNIDAS

En mayo de 1952, el Consejo Económico y Social de las Naciones Unidas otorgó carácter consultivo al Instituto Interamericano de Estadística. El Instituto fué colocado en la "categoría B" reservada para "las organizaciones que tienen competencia especial en, y se interesan específicamente de, sólo unos pocos de los campos de actividad cubiertos por el Consejo."

Las deliberaciones de las Comisiones de Estadística y de Población de las Naciones Unidas son de particular interés para el IASI porque es en las reuniones de estos grupos en las que se determinan en gran parte los estándares mundiales en prácticas estadísticas. Como observador acreditado, el representante del IASI en el futuro estará en capacidad de escuchar y a veces de presentar los puntos de vista del Instituto en las discusiones.

Durante los primeros años de su existencia el Instituto no consideró oportuno solicitar a las Naciones Unidas el carácter de consultivo debido a incertidumbres involucradas en su propia estructura y en sus relaciones con los países. Estas dificultades se desvanecieron con la celebración del acuerdo de afiliación entre el Instituto y la Organización de los Estados Americanos. Es con genuina satisfacción que el IASI da la bienvenida a una formalización de estas relaciones de consulta, que hasta ahora han existido en gran parte mediante relaciones de trabajo informales y de cooperación entre el personal de la Oficina de Estadística y la División de Población de las Naciones Unidas, y la Secretaría del Instituto. (Fuente: H.L.D., Washington, D.C.).

PERSONAL NOTES

● *Mr. Francisco de Abrisqueta,* secretary general of IASI, left Washington, D.C., in December 1952 for a trip to Santiago, Chile, to participate in the Inter-American Seminar on National Income, held under the auspices of the Government of Chile, the United Nations Statistical Office, the Pan-American Union (PAU), and IASI; and to attend the opening of the Inter-American Training Center for Economic and Financial Statistics, established and organized under the auspices of IASI, PAU, and the Chilean Government. (Fuller details on both the Seminar and the Center are given in *Estadística* no. 37, December 1952.) En route, Mr. Abrisqueta stopped in Bogotá, Colombia for consultations.

● *Mr. John B. Rothrock,* IASI technician-consultant in foreign trade statistics, left Washington, D.C., early in November 1952 to spend a few weeks in the Mexico Office of the United Nations Economic Comission for Latin America (ECLA), assisting in the preparatory work on a uniform Central American tariff. He subsequently proceeded to Tegucigalpa, Honduras, to participate as a technical consultant in the work of the Subcommittee for the Unification of Tariff Nomenclatures of the Central American Countries. This is a Subcommittee of the Committee of Ministers of Economy of the Central American Isthmus on Economic Cooperation, which in turn is a part of ECLA. The Subcommittee began its work on November 25, 1952.

● The following members of the technical staff of the IASI Secretariat participated in the II Session of the Committee on Improvement of National Statistics, held in Canada, September 29-October 10, 1952: *Mrs. Rose W. Burton,* technician-consultant in industrial statistics; *Mrs. Felice J. Campos,* conference technician; *Mr. Omar Dengo O.,* technician-consultant in statistical administration; *Mr. Roque Garcia Frías,* technician-consultant in demography; *Mr. O. Alexander de Moraes,* technician-consultant in censuses; and *Mr. Antonio J. Posada F.,* technician-consultant in agriculture. Mr. Dengo also attended the International Seminar on Statistical Organization held in Ottawa immediately following the COINS Session.

● *Mrs. Rose W. Burton,* IASI technician-consultant in industrial statistics, visited several American countries during the period October 25 to December 17, 1952 in connection with the Institute's program in this field. Her schedule included: Argentina, Bolivia, Chile, Costa Rica, Dominican Republic, El Salvador, Haiti, Mexico, and Venezuela. The purpose of the trip was to study and observe at first hand the methods and procedures being used by these countries in their industrial censuses and current industrial statistical programs. A second objective was to discuss problems in this field which might constitute useful topics for discussion at the III Inter-American Statistical Conference. During these visits, the technician concentrated her observations primarily in the General Bureaus of Statistics, although in some countries other agencies concerned with industrial statistics were also consulted.

STATISTICAL NEWS — NOTICIAS ESTADISTICAS

INTERNATIONAL

International seminar on statistical organization

• An International Seminar on Statistical Organization was held at the Dominion Bureau of Statistics, in Ottawa, Canada, October 13-31, 1952. Arranged by the Technical Assistance Administration and the Statistical Office of the United Nations with the cooperation of the Government of Canada and interested specialized agencies, this Seminar was designed to provide a basis for study and appraisal of common problems of statistical organization in various countries. A wide range of subjects was covered, relating to different aspects of statistical office organization, management, and administration. Specific topics listed in the program included, among others: Functions of a national statistical system; types of national statistical systems; problems of coordination and methods of control; organization of the international statistical system; organization of a principal operating statistical office; general problems of data collection and data processing; sampling uses and limitations; general problems of publication; budget planning and cost control of a statistical operation; special problems of organization and operation in the fields of external trade statistics, agricultural statistics, population and housing statistics, statistics of prices, cost of living, and

Seminario internacional sobre organización estadística

• En la Dirección de Estadística del Dominio, Ottawa, Canadá, tuvo lugar de octubre 13 a 31 de 1952 un Seminario Internacional sobre Organización Estadística. Preparado por la Administración de Asistencia Técnica y la Oficina de Estadística de las Naciones Unidas, con la cooperación del Gobierno del Canadá y los organismos especializados interesados, este Seminario fué planeado para proveer una base para el estudio y apreciación de problemas comunes de organización estadística en varios países. Se abarcó un conjunto amplio de temas referentes a los diversos aspectos de la organización, dirección, y administración de una oficina estadística. En el programa se incluyeron, entre otros, los siguientes tópicos específicos: Funciones de un sistema estadístico nacional; tipos de sistemas estadísticos nacionales; problemas de coordinación y métodos de control; organizacón del sistema estadístico internacional; organización de una oficina principal de servicios estadísticos; problemas generales de recolección y elaboración de datos; usos y limitaciones del muestreo; problemas generales de publicación; planeamiento presupuestal y control de costos de una operación estadística; problemas especiales de organización y operación en las estadísticas de comercio exterior, estadísticas agropecuarias, estadísticas de

employment, industrial production statistics, financial statistics, vital and health statistics, transport statistics, national income statistics; legal provisions for a national system, and survey for planning statistical reorganization; statistical personnel.

The Seminar was part of the overall training program in statistics under which the United Nations has collaborated with a considerable number of countries by: (a) Awarding fellowships and scholarships for advanced training in statistics; (b) assigning expert consultants to assist in organizing and improving statistical operations; and (c) conducting regional training centers on special statistical subjects. It was financed under the program of the UN Technical Assistance Administration, which permits assistance to countries only at their request. Hence invitations to participate were limited by both this and other practical considerations. Under technical assistance arrangements, directors general of statistics or their chief officers attended from approximately 26 countries of the world (12 from Latin America and 14 from other countries of the world) which had indicated to the United Nations their interest in establishing a statistical service or in reorganizing and improving existing statistical services. Since the dates of the Seminar were fixed to fall immediately following the dates of the II Session of the Committee on Improvement of National Statistics, of the Inter American Statistical Institute, also held at the Do-

población y vivienda, estadísticas de precios, de costo de vida y de empleo, estadísticas de producción industrial, estadísticas financieras, estadísticas vitales y sanitarias, estadísticas de transportes, estadísticas de ingreso nacional; disposiciones legales para un sistema nacional, e investigaciones para planear la reorganización estadística; personal estadístico.

El Seminario formó parte del programa general de entrenamiento en estadística conforme al cual las Naciones Unidas han colaborado con un número considerable de países: (a) Otorgando becas para entrenamiento avanzado en estadística; (b) asignando asesores expertos para ayudar a organizar y mejorar las operaciones estadísticas; y (c) realizando centros regionales de entrenamiento sobre temas estadísticos especiales. Fué financiado bajo el programa de la Administración de Asistencia Técnica de las Naciones Unidas, el que permite dar asistencia sólo a los países que la soliciten. Así, las invitaciones para participar se limitaron por ésa y otras consideraciones prácticas. Con base en acuerdos de asistencia técnica, asistieron los directores generales de estadística o funcionarios principales de aproximadamente 26 países del mundo (12 de Latinoamérica, y 14 de otros países del mundo), que habían indicado a las Naciones Unidas su interés en establecer un servicio estadístico o reorganizar y mejorar los servicios estadísticos existentes. Dado que las fechas de celebración del Seminario fueron fijadas para inmediatamente después de la II Sesión de la Comisión de Mejoramiento de las Estadísticas Nacionales del

minion Bureau of Statistics in Ottawa, it was possible for a number of the participants from Latin American countries to combine in a single trip their participation in both events.

Information concerning publication plans for the report on this Seminar should be addressed to the Statistical Office of the United Nations, New York. (Source: Documents of the Seminar, October 1952.)

Inter-American Centre of Biostatistics in Chile

• An Inter-American Centre of Biostatistics (CIB) is being organized in Santiago, Chile, by the United Nations (UN), the World Health Organization and the Government of Chile in collaboration with other interested agencies. This Centre, which is a 5-year project under the UN Expanded Programme of Technical Assistance, is designed to provide training courses and seminars in all phases of theoretical and applied biostatistics and to assist in the development of the vital and health statistics system of Chile. Plans for this long-range progamme are now well advanced and it is hoped that the first of the seminars will open in March 1953 at the beginning of the scholastic year. A byproduct of the Centre will be an increased supply of teaching and research materials in Spanish, developed in the course of the training and demonstration activities. Teams

Instituto Interamericano de Estadística, realizado igualmente en la Dirección de Estadística del Dominio de Ottawa, fué posible que algunos participantes de los países latinoamericanos combinaran en un solo viaje su participación en las dos reuniones.

De la Oficina de Estadística de las Naciones Unidas en Nueva York puede obtenerse información concerniente a los planes de publicación del informe sobre este Seminario. (Fuente: Documentos del Seminario, octubre 1952.)

Centro Interamericano de Bioestadística en Chile

• Las Naciones Unidas (UN), la Organización Mundial de la Salud, y el Gobierno de Chile en colaboración con otros organismos interesados, están organizando un Centro Interamericano de Bioestadística (CIB) en Santiago, Chile. Dicho Centro, que constituye un proyecto quinquenal bajo el Programa Ampliado de Asistencia Técnica de UN, ha sido delineado para ofrecer cursos de capacitación y seminarios en todas las fases de la bioestadística teórica y aplicada, y para ayudar al desarrollo del sistema de estadísticas vitales y sanitarias de Chile. Los arreglos para este programa de larga duración están actualmente muy adelantados y se espera que el primer seminario comience en marzo de 1953, a principios del año escolar. Como subproducto del Centro, habrá un aumento en la cantidad de materiales de enseñanza y de investigación en

of experts in the various subject-matter fields will advise Chilean technicians on the implementation of the programme adopted by the Centre. A fellowship programme will also be established to enable students from Latin American countries to take advantage of the facilities of this Centre.

The following working groups are already operating: One to put into practice the use of a new medical certificate of death in Chile; one to design the punch cards and study the procedure to be used in preparing an alphabetical index of birth registrations for the city of Santiago; and one to study the development of the Statistical Section of the Barros Luco Hospital as a demonstration centre.

The following services are being prepared for development into demonstration centres: (1) The Office of Civil Registration (Second Circumscription of the City of Santiago), has been designated as the demonstration centre on local registration procedures. (2) The Barros Luco Hospital has been designated by the Beneficencia as the place to serve as the demonstration centre in hospital statistics. (3) The General Bureau of Statistics is planning to set up a unit to demonstrate how to produce statistical publications. (Sources: UN *Statistical Notes,* No. 13 and 14; Octavio Cabello, CIB, Santiago, October 1952.)

español, los cuales se producirán en el curso de las actividades de enseñanza y de demonstración. Equipos de expertos en las diversas materias asesorarán a los técnicos chilenos en la implantación del programa adoptado por el Centro. Se establecerá además un programa de becas para permitir a los estudiantes de los países latinoamericanos beneficiarse de las facilidades del citado Centro.

Los siguientes grupos de trabajo están ya funcionando: Uno para poner en práctica el uso de un nuevo certificado médico de defunción en Chile; uno para diseñar las tarjetas para la perforación, y para estudiar el procedimiento a seguir en la preparación de un índice alfabético de los registros de nacimientos de Santiago; y uno para estudiar el desarrollo de la Sección Estadística del Hospital Barros Luco como un centro de demostración.

Los siguientes servicios están siendo preparados para su transformación en centros de demostración: (1) El Servicio del Registro Civil (Segunda Circunscripción de la Ciudad de Santiago) ha sido designado centro de demostración para los procedimientos locales de registro. (2) El Hospital Barros Luco ha sido designado para la Beneficencia para servir de centro de demostración en estadísticas hospitalarias. (3) La Dirección General de Estadística proyecta organizar una unidad de demostración sobre cómo producir publicaciones estadísticas. (Fuentes: UN *Statistical Notes,* No. 13 and 14; Octavio Cabello, CIB, Santiago, octubre 1952.)

ISI forthcoming session in Rome, 1953

• The XXVIII Session of the International Statistical Institute (ISI) will be held in Rome, at the invitation of the Government of Italy, September 6-12, 1953. The theme adopted by the ISI Executive Committee will treat the role of statistics in the improvement of industrial productivity. Four meetings on this central topic are contemplated, the programs of which will be concerned with: (a) The measurement of productivity; (b) the use of ... statistics (to be specified) as a tool in the improvement or productivity; (c) applications of statistical methods to standardization in industry. It has further been decided to include in the program the topic "Recent developments in various fields,' which was on the agenda of a previous session held in Berne, Switzerland. (Source: G. Goudswaard, ISI, Berne, September 1952.)

Próxima sesión de ISI en Roma, 1953

• A invitación del Gobierno de Italia, se realizará en Roma en septiembre 6-12 de 1953, la XXVIII Sesión del Instituto Internacional de Estadística (ISI). El tema adoptado por el Comité Ejecutivo tratará el papel de la estadística en el mejoramiento de la productividad industrial. Se contempla realizar cuatro reuniones sobre este tópico central. Los programas correspondientes se referirán a: (a) La medida de la productividad; (b) el uso de las estadísticas de ... (a especificarse) como una herramienta para mejorar la productividad; (c) aplicaciones de los métodos estadísticos a la estandarización en la industria. Con posterioridad se ha decidido incluir en el programa el tópico "Desarrollos recientes en varios campos," que figuró en la agenda de una sesión anterior, realizada en Berna, Suiza. (Fuente: G. Goudswaard, ISI, Berna, septiembre 1952.)

ISI Committee on industrial applications of statistics

• The International Statistical Institute (ISI) at its XXVI Session held in Berne, Switzerland, September 1949, appointed an International Committee on Industrial Applications of Statistics, consisting of expert industrial statisticians. The functions of this Committee have been provisionally formulated as: (1) To advise ISI in matters related to industry; (2) to provide industrial contributions to the biennial sessions of ISI; (3) to organize and supervise the preparation of an

Comité de ISI sobre aplicaciones industriales de la estadística

• El Instituto Internacional de Estadística (ISI) designó, en su XXVI Sesión celebrada en Berna, Suiza, en septiembre de 1949, un Comité Internacional sobre Aplicaciones Industriales de la Estadística, compuesto por expertos estadísticos industriales. Las funciones de este Comité han sido formuladas provisionalmente como las de: (1) Servir de consultor al ISI en materias relacionadas con la industria; (2) proporcionar trabajos sobre la industria a las sesiones bienales del ISI; (3) organizar y vigilar la preparación de una Bibliografía Comentada; y (4)

Annotated Bibliography; and (4) in general to encourage and promote the application of statistical methods in industry. Suggested ways of carrying out the intent of the last-named function are: (a) By facilitating personal contacts and an exchange of experience between statsticians in different countries; (b) by encouraging the teaching of industrial statistics in underdeveloped countries; (c) by promoting the coordination of statistical research in different countries; (d) by standardizing symbols and terminology; and (e) by promoting the application of statistical methods in the standardization of industrial techniques and products.

This Committe organized two meetings during the XXVII Session in New Delhi, India, December 5-11, 1951, with speakers on: "Industrial Applications of Statistics in Various Countries" and a series of nontechnical evening lectures on "The Contribution of Statistics to Industrial Development."

For the program at the XVIII Session to be held in Rome, Italy, in September 1953, the Committee plans to hold several sessions tentatively scheduled to be devoted to: (1) The teaching of the statistical control of quality; (2) statistical problems of standardization; and (3) another series of nontechnical evening lectures for statisticians and for executives in manufacturing and industry. (Source: W. E. Deming, Bureau of the Budget, Washington, D. C., November 1952.)

en general, estimular y promover la aplicación de métodos estadísticos en la industria. Se han sugerido los siguientes medios para llevar a cabo los propósitos de la última de las funciones mencionadas: (a) Facilitar los contactos personales y el intercambio de experiencias entre los estadísticos de diferentes países; (b) estimular la enseñanza de la estadística industrial en los países menos desarrollados; (c) promover la coordinación de las investigaciones estadísticas en diferentes países; (d) estandarizar los símbolos y la terminología; y (e) promover la aplicación de métodos estadísticos en la estandarización de técnicas y productos industriales.

Este Comité organizó dos reuniones durante la XXVII Sesión del Instituto, celebrada en Nueva Delhi, India, del 5 al 11 de diciembre de 1951, en las cuales presentó oradores sobre: "Aplicaciones Industriales de la Estadística en Varios Países" y una serie de conferencias nocturnas de carácter no técnico, sobre: "La Contribución de la Estadística al Desarrollo Industrial."

Dentro del programa para la XXVIII Sesión que tendrá lugar en Roma, Italia, en septiembre de 1953, el Comité tiene planeado celebrar varias reuniones que tentativamente se ha pensado dedicar a: (1) La enseñanza del control estadístico de la calidad; (2) los problemas estadísticos de la entandarización; y (3) otra serie de conferencias nocturnas de carácter no técnico para estadísticos y directores de empresas manufactureras e industriales. (Fuente: W. E. Deming, Bureau of the Budget, Washington, D. C., noviembre 1952.)

World conference on population

• The UN Economic and Social Council, by resolution passed in June 1952, has approved the holding of a world population conference of experts in 1954, under the auspices of the United Nations, in close collaboration with the International Union for the Scientific Study of Population and interested specialized agencies. This conference will be devoted solely to the exchange of ideas and experience on population matters among experts in the field concerned. Such topics as the following are proposed to be treated: Demographic aspects of problems of economic development of underdeveloped countries; demographic aspects of post-war migration problems; probable future growth of population; aging of the population; legislation relevant to population; methodology. The time and place of the conference has not yet been fixed. (Source: UN doc. E/2199, April 9, 1952, annex II; E/2258, June 17, 1952.)

Tourist statistics

• The IV Inter-American Travel Congress, sponsored by the Organization of American States, met in Lima, Peru, from April 12 to April 20, 1952. In attendance were delegates and observers from 19 Latin American countries, several European countries, and various national and international organizations. Among the resolutions passed by this Congress was the following relating to statistics of tourist travel:

Conferencia mundial sobre población

• El Consejo Económico y Social de las Naciones Unidas, por resolución adoptada en el mes de junio de 1952, ha aprobado la celebración en 1954 de una conferencia mundial de expertos en población, bajo los auspicios de las Naciones Unidas, en estrecha colaboración con la Unión Internacional para el Estudio Científico de la Población y con los organismos especializados interesados. Esta conferencia estará dedicada únicamente al intercambio de ideas y experiencias sobre temas de población entre expertos en este campo. Tópicos tales como los siguientes han sido propuestos para consideración: Aspectos demográficos de los problemas referentes al desarrollo económico en los países poco desarrollados; aspectos demográficos de los problemas migratorios de post guerra; crecimiento futuro probable de la población; envejecimiento de la población; legislación pertinente a población; metodología. No han sido establecidos aún el lugar ni fecha para la conferencia. (Fuente: UN doc. E/2199, abril 9, 1952, anexo II; E/2258, junio 17, 1952.)

Estadísticas de turismo

• El IV Congreso Interamericano de Turismo, auspiciado por la Organización de los Estados Americanos, se reunió en Lima, Perú, del 12 al 20 de abril de 1952. Asistieron delegados y observadores de 19 países latinoamericanos, varios países europeos y organizaciones nacionales e internacionales. Entre las resoluciones aprobadas por este Congreso se encuentra la siguiente referente a estadísticas de turismo:

"VI. Uniformity in the statistical systems for tourist travel: (1) To recommend to the General Secretariat of the Organization of American States that it collect information from the Member Governments on the statistical systems employed by them in connection with tourist travel in their respective countries. (2) To request the General Secretariat of the Organization of American States to plan, through its Travel Division and the Inter American Statistical Institute, a uniform statistical system for tourist travel in America, which shall take into account the data collected in accordance with section 1 of this resolution." (Source: *Fourth Inter-American Travel Congress: Lima, Peru, April 12-20, 1952,* Pan American Union, Washington, D. C., 1952.)

Principles for statistics of external trade

• The United Nations Statistical Office is circulating to governments for comment a technical report on definitions for external trade statistics titled "Principles of Statistics of External Trade." This report was prepared by a group of experts appointed by UN to formulate recommendations to extend, and when necessary, to replace, those contained in the League of Nation's "International Convention Relating to Economic Statistics." (See earlier note in *Estadística* No. 37.) The group examined current concepts and practices in the field of external trade statistics, and recommended substantial changes in the practices advocated by the 1928 International

"VI. Uniformidad del sistema de la estadística aplicada al turismo: (1) Recomendar a la Secretaría General de la Organización de los Estados Americanos recabe de los Miembros de ésta, información relativa al sistema de estadística que aplican para el turismo en sus respectivos territorios. (2) Solicitar de la Secretaría General de la Organización de los Estados Americanos que, mediante su División de Turismo y el Instituto Interamericano de Estadística, proyecte un sistema para la estadística uniforme del turismo en los países de América, en vista de las informaciones que recabe, de conformidad con la disposición que precede." (Fuente: *Cuarto Congreso Interamericano de Turismo: Lima, Perú, 12 al 20 de abril de 1952,* Unión Panamericana, Washington, D.C., 1952.)

Principios para estadísticas de comercio exterior

• La Oficina de Estadística de las Naciones Unidas envía a los gobiernos para comentario un informe técnico sobre definiciones para estadísticas de comercio exterior titulado "Principles for Statistics of External Trade." Este informe fué preparado por un grupo de expertos nombrado por UN para que formulara recomendaciones que extendieran, y cuando fuera necesario, que reemplazaran, las contenidas en "International Convention Relating to Economic Statistics" de la Sociedad de las Naciones. (Véase nota anterior en *Estadística* No. 37.) El grupo examinó los conceptos y prácticas corrientes en el campo de las estadísticas de comercio exterior, y recomendó cambios substanciales en las prácticas propugnadas por la

Convention in order to bring them into line with existing conditions. Principal attention was given to the kinds of transactions and categories of goods; the definition of the trading partner of a country; the method of valuation of goods for recording trade statistics; and the measurement of trade in terms of physical quantities. (Source: UN doc. E/CN.3/142, October 6, 1952.)

Handbook on system of national accounts, UN

• The Statistical Commission of the United Nations (UN), at its IV and V sessions, recommended that the Secretariat should continue its work on proposals for providing a uniform basis for reporting national income statistics, and stressed the need for establishing standards in this field as soon as possible. To aid in this work the secretary general appointed a Committee of National Income Experts, which met at UN Headquarters in July 1952 to consider the development of a standard system of national accounts which would provide a framework for reporting internationally comparable national income and product statistics. Members of the Committee were: Loreto M. Dominguez, Department of Economic and Social Affairs, Pan American Union; Kurt Hansen, Ministry of Finance, Denmark; George Jaszi, chief, National Income Division, United States Department of Commerce; Moni Mohan Mukherjee, statistician, National Income Unit, Ministry of Finance

Convención Internacional de 1928 para ajustarlas a las condiciones existentes. Se dió especial atención a las clases de transacciones y categorías de mercaderías; a la definición de la contraparte comercial de un país; al método de valuación de las mercaderías registradas en las estadísticas del intercambio; y a la medición del intercambio en función de las cantidades físicas. (Fuente: UN doc. E/CN./3/142, octubre 6, 1952.)

Manual sobre sistema de contabilidad nacional, UN

• La Comisión de Estadística de las Naciones Unidas (UN), en sus IV y V sesiones, recomendó que la Secretaría continuara su trabajo sobre las propuestas para proveer una base uniforme para la presentación de las estadísticas de ingreso nacional, y destacó la necesidad de establecer estándares en este campo tan pronto como fuera posible. Para ayudar en dicho trabajo la secretaría general designó una Comisión de Expertos en Ingreso Nacional; que se reunió en la sede de UN en el mes de julio de 1952 para considerar el desarrollo de un sistema estándar de contabilidad nacional que sirviera de normas para la presentación comparable en el orden internacional de las estadísticas de ingreso y producto nacional. Los miembros de esa Comisión fueron: Loreto M. Domínguez, Departamento de Asuntos Sociales y Económicos, Unión Panamericana; Kurt Hansen, Ministerio de Finanzas, Dinamarca; George Jazzi, jefe, División de Ingreso Nacional, Departamento de Comercio de los Estados Unidos; Moni Mohan Mukherjee, estadísti-

of India; Richard Stone, director of the Department of Applied Economics, University of Cambridge. The Committee's report, titled *A System of National Accounts and Supporting Tables,* has been issued by the UN Statistical Office and circulated in October 1952 to governments for comment.

The report surveys the development and uses of national accounting, describes the basic concepts underlying the construction of national accounts, presents a standard system of accounts and a standard set of tables which are believed to be suitable for general use, and gives detailed definitions of the flows which enter the standard accounts and tables. It also includes two appendices which relate to the problems of industrial and commodity classification. Since its purpose is to submit proposals for a standard system of national accounts, with emphasis particularly on international standards of concepts and classification, this report gives no attention to the statistical problems of compiling and measuring the items entering into the accounts. Such problems are, however, being treated in a handbook on *Methods of Estimating National Income,* now in preparation by the Secretariat. (Source: *A System of National Accounts...,* UN Statistical Office, New York, August 1952.)

co, Sección de Ingreso Nacional, Ministerio de Finanzas de la India; Richard Stone, director del Departamento de Economía Aplicada, Universidad de Cambridge. El informe de la Comisión, titulado *A System of National Accounts and Supporting Tables,* fué publicado por la Oficina de Estadística de UN y enviado en el mes de octubre de 1952 a los gobiernos para comentario.

En informe estudia el desarrollo y usos de la contabilidad nacional, describe los conceptos básicos que fundamentan la construcción de las cuentas nacionales, presenta un sistema estándar de cuentas y un juego estándar de cuadros que se consideran apropiados para uso general, y da definiciones detalladas de los movimientos que entran en las cuentas y cuadros estándares. Incluye igualmente dos apéndices que se refieren a los problemas de la clasificación industrial y de mercaderías. El informe no presta atención a los problemas estadísticos de compilación y medición de los ítems que entran en las cuentas ya que su objetivo es presentar propuestas para un sistema estándar de cuentas nacionales, con particular énfasis en lo que se refiere a los estándares internacionales en los conceptos y clasificación. Sin embargo, tales problemas son estudiados en un manual sobre *Methods of Estimating National Income,* que actualmente está siendo preparado por la Secretaría. (Fuente: *A System of National Accounts...,* Oficina de Estadística de la UN, Nueva York, agosto 1952.)

Education and cultural statistics, UNESCO

• The United Nations Educational, Scientific and Cultural Organization (UNESCO), in compliance with article VIII of its constitution, requires each Member State to report periodically to the Organization "on its laws, regulations and statistics relating to educational, scientific and cultural life and institutions." One of the compilations resulting from the collection of this type of information is *Basic Facts and Figures,* published in 1952 by UNESCO (58 pages). Thirteen tables are included, on the following topics: Illiteracy, primary and higher education, libraries, museums, production of books, daily newspapers, newsprint consumption, film production, cinema attendance, and radio broadcasting receivers. The countries from which data are presented include all of the American nations, with respect to at least some of the tables. Data of the 1950 censuses are not included because they were not available at the time of preparation of this publication. According to this publication, it has been estimated that at least one-half of the world's people today cannot read or write. (Source: *Basic Facts and Figures,* UNESCO, Paris, 1952.)

Estadísticas de la educación y la cultura, UNESCO

• La Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura (UNESCO), en cumplimiento del artículo VIII de su constitución, pide a cada uno de los Países Miembros que informen periódicamente a la Organización "sobre sus leyes, reglamentos y estadísticas relacionadas con su vida e instituciones educativas, científicas y culturales." Una de las compilaciones resultantes de la recolección de este tipo de información es *Basic Facts and Figures,* publicada por UNESCO en 1952 (58 páginas). Se incluyen trece cuadros, sobre los siguientes tópicos: Analfabetismo, educación primaria y superior, bibliotecas, museos, producción de libros, periódicos, consumo de noticias impresas, producción de películas, asistencia al cinematógrafo y aparatos radiorreceptores. Los países sobre los que se presentan datos incluyen todas las naciones americanas, por lo menos con respecto a algunos de los cuadros. No se incluyen datos de los censos de 1950 porque todavía no se encontraban disponibles al momento de preparar esta publicación. De acuerdo con la misma, se ha estimado que por lo menos la mitad de la población mundial no puede leer o escribir. (Fuente: *Basic Facts and Figures,* UNESCO, Paris, 1952.)

Standards for statistics of education

• The United Nations Educational, Scientific and Cultural Organization (UNESCO) in mid-1953 circulated to Member States and to others for comment the following

Estándares para estadísticas de educación

• La Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura (UNESCO) envió, a mediados del año 1952, para comentario los dos documentos si-

two documents: (1) *Definitions, Classifications and Tabulations in Statistics on Education* (doc. ST/R.6, 28 April 1952). This is a preliminary study, originally drafted as a working paper for the Expert Committee on Standardization of Educational Statistics, Paris, 5-9 November 1951. (2) *Report of the Expert Committee on Standardization of Educational Statistics, Paris, 5-9 November 1951* (doc. ST/R.4, 2 January 1952).

Contents of the study *Definitions, Classifications* ... include: I, Introduction (history, problems); II, Definitions (school age and school age population, public and private schools, units of administration and instruction, pupils and students, teachers, educational expenditures); III, Classification of school levels (introduction and previous investigations, pre-school education, general education—primary and secondary, vocational and technical education, teacher training, higher education, special education—post-school and adult education); IV, Tabulations (introduction, information required, existing national practices); appendixes containing extracts from previous reports on this subject by Lucien March, 1928, Vicenzo Castrilli, 1936, and Germano Jardim, 1949.

The report of the Committee of Experts contains a number of recommendations for the standardization of some of the definitions, classifications, and methods of tabulation as applied to statistics on illiteracy and formal education at different levels.

Comments received as a result of this circulation will be taken into

guientes: (1) *Definitions, Classifications and Tabulations in Statistics on Education* (doc. ST/R.6, 28 abril 1952). Es éste un estudio preliminar, bosquejado como documento de trabajo para la Comisión de Expertos en la Estandarización de las Estadísticas Educacionales, París, noviembre 5—9, 1951. (2) *Report of the Expert Committee on Standardization of Educational Statistics, Paris, 5—9 November 1951* (doc. ST/R.4, 2 enero 1952).

El contenido del estudio *Definitions, Classification* ... incluye: I, Introducción (historia, problemas); II, Definiciones (edad escolar y población de edad escolar, escuelas públicas y privadas, unidades de administración e instrucción, alumnos y estudiantes, maestros, gastos educacionales); III, Clasificación de los niveles escolares (introducción e investigaciones anteriores, educación pre-escolar, educación general—primaria y secundaria, educación vocacional y técnica, preparación de maestros, educación superior, educación especial—educación de adultos y post-escolar); IV, Tabulaciones (introducción, información requerida, prácticas nacionales existentes); apéndices contentivos de extractos de informes anteriores sobre este tema por Lucien March, 1928, Vicenzo Castrilli, 1936, y Germano Jardim, 1949.

El informe de la Comisión de Expertos contiene un conjunto de recomendaciones para la estandarización de algunas de las definiciones, clasificaciones y métodos de tabulación aplicados a las estadísticas de analfabetismo y educación formal en diferentes niveles.

Los comentarios recibidos como resultado de esta consulta serán con-

account by the UNESCO Secretariat in a definitive report on the subject which will be submitted to the General Conference of UNESCO at its VII Session, November 12 — December 10, 1952. (Source: Statistical Division, UNESCO, and the documents mentioned.)

Handbook of Educational Organization and Statistics, UNESCO

• The United Nations Educational, Scientific and Cultural Organization (UNESCO) has published the first edition (1951) of its *World Handbook of Educational Organization and Statistics,* presenting statistical data on schools, enrollment, teaching staffs, educational expenditures, and other aspects of the educational systems of about 60 different countries. The introduction to the volume reviews previous international efforts to compile statistics in the field, discusses the need for and availability of such data, and indicates some of the problems of terminology and lack of comparability.

The Handbook is arranged alphabetically by country, with a separate section for each country. No summary tables are presented containing comparable figures for different countries, as the lack of agreement among countries on definitions and concepts has so far precluded the possibility of assembling data suitable for such tables.

The descriptive material contained in the Handbook includes diagrams showing the organization of the school system and information on the legal basis, administration and organization of the system, provisions for adult education, health

siderados por la Secretaría de UNESCO en un informe definitivo sobre el tema que será sometido a la Conferencia General de UNESCO en su VII Sesión, noviembre 12 — diciembre 10, 1952. (Fuente: División de Estadística, UNESCO, y los documentos mencionados.)

Manual sobre Organización y Estadísticas de la Educación, UNESCO

• La Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura (UNESCO) ha publicado la primera edición (1951) de su *World Handbook of Educational Organization and Statistics,* en el cual se presentan datos estadísticos sobre escuelas, matrículas, personal de enseñanza, gastos en la educación y otros aspectos de los sistemas educativos de cerca de 60 países diferentes. La introducción a la obra pasa revista a los anteriores esfuerzos internacionales para compilar estadísticas en este campo, estudia la necesidad y disponibilidad de tales datos e indica algunos de los problemas de terminología y falta de comparabilidad.

El Manual está ordenado alfabéticamente por países, con una sección separada para cada país. No se presentan cuadros resúmenes que contengan cifras comparables de los diferentes países, debido a que la falta de acuerdos entre ellos sobre definiciones y conceptos hasta ahora ha impedido la posibilidad de reunir datos apropiados para ese tipo de cuadros.

El material descriptivo que contiene el Manual incluye diagramas sobre la organización de los sistemas escolares e información sobre las bases legales, la administración y organización de los sistemas, las

services, school buildings, finance, private schools, and education and status of teachers. A brief glossary of terminology used in the Handbook is appended.

The Handbook is available in English or French editions at $9.00 per copy from the International Documents Service, Columbia University Press, New York 27, N. Y. (Source: *World Handbook* ...; Paris, 1951.)

medidas para la educación de adultos, servicios sanitarios, edificios escolares, finanzas, escuelas privadas y educación y situación de los maestros. Como apéndice figura un breve glosario de la terminología usada en el Manual.

El Manual se puede obtener, en ediciones inglesa o francesa a US$ 9.00 el ejemplar, del International Documents Service, Columbia University Press, New York 27, N. Y. (Fuente: *World Handbook* ..., París, 1951.)

ARGENTINA

Agricultural census of 1952

• In compliance with the provisions of an Executive Decree of September 10, 1952, Argentina on November 11, 1952 took an agricultural census covering the entire country.

The organization of the census undertaking was the responsibility of the Ministry of Technical Affairs, working through the medium of the National Bureau of Statistical Services, and of the National Agricultural Census Board. The latter body was created for the specific purpose of insuring closer collaboration among agencies of the national ministries and of the provincial and territorial governments. Pre-enumeration work (i.e. preparation of a directory of agricultural producers) and final data collection were the responsibility of the provincial and territorial governments which made use principally of the rural teachers who were to follow the technical

Censo agropecuario de 1952

• En cumplimiento de disposiciones legales fijadas por decreto del Poder Ejecutivo de 10 de septiembre de 1952, la Argentina levantó el 11 de noviembre 1952 un censo agropecuario que cubrió todo el territorio del país.

La organización del levantamiento censal estuvo a cargo del Ministerio de Asuntos Técnicos, por intermedio de la Dirección Nacional del Servicio Estadístico, y del Comando Nacional del Censo Agropecuario, creado al efecto, para asegurar la mayor y más estrecha colaboración de organismos pertenecientes a las distintas Secretarías de Estado y a los gobiernos provinciales y territoriales. Las labores de empadronamiento previo (elaboración de un directorio de los productores agropecuarios) y las de recolección final de datos estuvieron a cargo de los gobiernos provinciales y territoriales, los cuales se valieron para ello,

standards established by the National Board and transmitted to them via the provincial and territorial boards.

There were 246 questions on the census schedule covering the following topics: (1) General information on the holding and the farm operator; (2) tenure status and land utilization; (3) farm workers employed during the week preceding the census day; (4) livestock (number of animals and poultry, production of milk and derived products, production of wool, and livestock slaughtered for consumption); (5) agricultural data (area sown with cereals, industrial crops, fodder crops, vegetable crops, commercial forests, and flowers; number of olive trees, fruit trees, and vineyards in production; area in square meters of nurseries for fruit, forest, and other species of trees); and (6) agricultural machinery and installations.

The editing and coding processes have already begun, and preliminary results will be made public shortly. (Source: National Bureau of Statistical Services, Buenos Aires, November 1952.)

New statistical society

• As an outgrowth of a statistical seminar held in July 1952, under the sponsorship of the National University of Cuyo, an Argentine Statistical Society has been created. The Society is a technical and scientific organization created to stimulate the development of statistics in the country. Members of the Executive Committee are: Carlos E. Dieulefait, president; Gen. Eduardo

principalmente, del magisterio rural, siguiendo las normas de carácter técnico establecidas por el Comando Nacional, e impartidas a través de Comandos provinciales y territoriales.

El cuestionario censal contempló 246 preguntas sobre los siguientes tópicos: (1) Datos generales sobre la explotación y el productor; (2) régimen legal de la tierra y su utilización; (3) personal que trabajó en la explotación en la semana anterior al día del censo; (4) ganadería (existencia de ganados y aves de corral, producción de leche y derivados, producción de lana, y sacrificio de ganado para consumo); (5) agricultura (superficie sembrada de cereales, cultivos industriales, plantas forrajeras, hortalizas, bosques comerciales y flores; número de olivos, viñas y árboles frutales en producción; superficie en metros cuadrados de viveros frutales, forestales y otros); y (6) maquinaria e instalaciones agrícolas.

Los procesos de crítica y codificación de los cuestionarios censales han sido ya iniciados, y en breve se darán a conocer resultados preliminares. (Fuente: Dirección Nacional del Servicio Estadístico, Buenos Aires, noviembre 1952.)

Nueva sociedad estadística

• Como resultado de un seminario estadístico celebrado en julio de 1952, bajo los auspicios de la Universidad Nacional de Cuyo, se ha creado la Sociedad Estadística Argentina. La Sociedad es un organismo técnico científico creado para promover el desarrollo de la estadística en el país. Los miembros de la Comisión Directiva son: Carlos E. Dieulefait, presidente; Gral.

Garimaldi, first vice president; Agustín Durañona y Vedia, second vice president; Fausto I. Toranzos, secretary general; Guido O. Liserre, treasurer; José Barral Souto, Carlos Brignone, Emilio A. Machado, and José Yocca, members. (Source: C. E. Dieulefait and E. A. Machado, September 1952.)

Eduardo Garimaldi, primer vicepresidente; Agustín Durañona y Vedia, segundo vicepresidente; Fausto I. Toranzos, secretario general; Guido O. Liserre, tesorero; José Barral Souto, Carlos Brignone, Emilio A. Machado y José Yocca, miembros. (Fuente: C. E. Dieulefait y E. A. Machado, septiembre 1952.)

Personal notes — Noticias personales

• *Sr. Fernando Cortéz* has left the staff of the Statistical Office of the United Nations to take up his duties as chief statistician of the Rosario Experimental Research Center of Economic Statistics to which he has been recently appointed. In addition he is teaching statistics and mathematics on the Faculty of Economic, Commercial, and Political Sciences of the *Universidad Nacional del Litoral.* (September 1952.)

BRAZIL

Recent statistical activities

• As a part of its general endeavor to utilize modern techniques in statistical surveys, the Brazilian Institute of Geography and Statistics is now employing sampling methods in the field of agricultural statistics. A recent example is a study carried out in the State of Rio Grande do Sul. Through the distribution of some 30,000 questionnaires, the following information was known on the 287,000 rural properties of that State: Area under cultivation, average and total production, prices received by the primary producer for his products.

• Some recent publications which have appeared are the following: *Boletim Estatístico,* No. 39, July-September 1952; *Construção de um Indice Global de Salários Industriais,* by Lourival Câmara, 1952;

Recentes atividades estatísticas

• Como parte do seu esfôrço geral no sentido de aproveitar as modernas técnicas nas pesquisas estatísticas, o Instituto Brasileiro de Geografia e Estatística está empregando o processo de amostragem no levantamento das estatísticas agrícolas. Um exemplo recente é o estudo levado a efeito no Estado do Rio Grande do Sul. Mediante a distribuição de mais ou menos 30.000 questionários, não tardou que se conhecessem as seguintes informações nas 287.000 propriedades rurais daquele Estado: a área plantada, a média e o total da produção e o preço que o produtor recebe, em primeira mão, pelos seus produtos.

• Entre as publicações mais recentes destacam-se as seguintes: *Boletim Estadístico,* No. 39, julho-setembro de 1952; *Construção de um Indice Global de Salários Industriais,* por

Métodos Estatísticos Aplicados à Economia e aos Negócios, Brazilian translation of *Statistical Method Applied to Economics and Business,* by Frederick Cecil Mills. (Source: IBGE, Rio de Janeiro, November 1952.)

Lourival Câmara, 1952; *Métodos Estatísticos Aplicados à Economia e aos Negócios,* versão brasileira de *Statistical Method Applied to Economics and Business,* por Frederick Cecil Mills. (Fonte: IBGE, Rio de Janeiro, novembro 1952.)

Personal notes — Notas pessoais

• *Desembargador Florêncio Carlos de Abreu e Silva,* retired judge of the State High Court of Rio Grande do Sul, has been recently appointed by the President of Brazil to the post of *presidente* of the *Instituto Brasileiro de Geografia e Estatística,* succeeding *General Djalma Polli Coelho,* resigned. *Prof. Maurício Filchtiner* has been appointed to the position of *secretário geral* of the *Conselho Nacional de Estatística,* suceeding *Sr. Lourival Câmara.* Prof. Filchtiner, who has been a teacher of statistics in the University of Rio Grande do Sul, entered the statistical service of that State in 1937, and later held the post of director general of the State Department of Statistics.

• In attendance at the II Session of the Committee on Improvement of National Statistics, held in Ottawa, Canada, September-October 1952, were *Dr. Raul do Rego Lima* and *Sr. Tulo Hostílio Montenegro.* Dr. Lima is the *diretor do Serviço de Estatística da Produção, Ministério da Agricultura* in Rio de Janeiro. Sr. Montenegro was with the Secretariat of IASI, in Washington, D.C., for approximately one month prior to taking up his duties in Santiago, Chile as *director del Centro Interamericano de Enseñanza de Estadística Económica y Financiera.*

CANADA

Consumer price index

• The Prices Section of the Dominion Bureau of Statistics of Canada published *The Consumer Price Index, January 1949—August 1952* (33 p.). This is a 1-time publication, introducing the Consumer Price Index which was constructed to replace the Cost-of-Living Index. A general description of the methods of construction of the new index is contained in the publication, and

Indice de precios de los consumidores

• La Sección de Precios de la Dirección de Estadística del Canadá publicó *The Consumer Price Index, January 1949 — August 1952* (33 p.). Esta publicación, que se edita por una sola vez, introduce el Indice de Precios de los consumidores, construido para reemplazar al Indice del Costo de la Vida. Contiene una descripción general de los métodos para construir el nuevo índice, así como un registro del índice

also a record of the total index and its main components from January 1949 to August 1952. The explanatory statement given in part I covers the following aspects: Index title and definition; family coverage; base period; item content of the index; the index weights; formula; prices; index calculation, seasonality; the shelter index; taxes; insurance. The charts and tables are contained in part II.

Continuing consumer price index information will be carried in *Prices and Price Indexes,* a regular monthly publication of the DBS. (Source: DBS, Ottawa, November 1952.)

total y sus principales componentes de enero de 1949 a agosto de 1952. La nota explicativa que aparece en la parte I cubre los siguientes aspectos: Título y definición del índice; tipos de familias; período base; artículos incluidos en el índice; ponderaciones del índice; fórmula; precios; cálculo del índice; variaciones estacionales; el índice de alquileres; impuestos y seguros. La parte II contiene los gráficos y cuadros.

La información continua sobre el índice de precios de los consumidores será presentada regularmente en *Prices and Price Indexes,* publicación mensual de la Dirección de Estadística. (Fuente: DBS, Ottawa, noviembre 1952.)

Earnings and hours in manufacturing

• The Employment Section of the Dominion Bureau of Statistics has recently published *Earnings and Hours of Work in Manufacturing, 1951,* which gives the results of a survey conducted in October 1951 under which for the first time in Canada, information was obtained as to the numbers and average earnings of office workers as distinct from other categories of salaried employees, in manufacturing.

Annual surveys of earnings and hours in manufacturing are made to supplement the monthly record of employment, payrolls, and man-hours by providing separate data for men and women and for wage-earners and salaried employees. From 1946 to 1949, distributions of

Sueldos y horas de trabajo en la manufactura

• La Sección de Empleo de la Dirección de Estadística ha publicado recientemente *Earnings and Hours of Work in Manufacturing, 1951,* la cual proporciona los resultados de una investigación realizada en octubre de 1951 según la cual se obtuvo, por primera vez en el Canadá, información sobre las cantidades y promedio de sueldos de los empleados de oficina, tomados como grupo distinto a los de otras categorías de trabajadores asalariados, en la manufactura.

Se realizan investigaciones anuales de los sueldos y horas de trabajo en la manufactura con el fin de complementar el registro mensual de empleo, nóminas y horas-hombre, mediante el procedimiento de proporcionar datos por separado para hombres y mujeres y para obreros y empleados. De 1946 a 1949 se publicaron distribuciones de obreros

wage-earners by hours worked in the week surveyed were published, and in 1950, a distribution of wage-earners and salaried employees by range of earnings. In 1951, office workers were segregated for the first time from managerial, professional, and other salaried employees. Like the monthly series, the annual inquiries relate to establishments that usually employ 15 or more persons. They cover at least 85 percent of all employees engaged in manufacturing, as reported to the Annual Census of Manufactures. (Sources: DBS, Ottawa, November 1952; *Earnings and Hours ...)*

Population census results

• Since February 1952, the Dominion Bureau of Statistics of Canada has been issuing a series of bulletins giving final population totals from the IX Decenial Census of Canada, taken June 1, 1951. Data have been presented in this series for the following: Electoral districts by sex; electoral districts and census subdivisions; sex, for census subdivisions (all provinces, counties, and their subdivisions); census metropolitan areas; incorporated cities, towns, and villages; rural and urban distribution; and age groups. An appendix to the bulletins in this series contains reference maps for each of the 10 provinces of Canada, outlining the boundaries of the counties, or census divisions, as the case may be.

por las horas trabajadas en la semana de la investigación, y en 1950 se publicó una distribución de los empleados y obreros por la escala de sueldos. En 1951, los empleados de oficina se separaron por primera vez de los empleados de administración, profesionales y otros tipos de empleados asalariados. Lo mismo que las series mensuales, las encuestas anuales se refieren a los establecimientos que por lo general emplean 15 o más personas. Estos cubren por lo menos el 85 por ciento de todos los empleados que se ocupan en la manufactura, según los informes proporcionados al Censo Anual de Manufacturas. (Fuentes: DBS, Ottawa, noviembre 1952; *Earnings and Hours...)*

Resultados del censo de población

• Desde febrero de 1952, la Dirección de Estadística del Canadá ha estado publicando una serie de boletines con los totales definitivos de población obtenidos en el IX Censo Decenal del Canadá, levantado en junio 1 de 1951. En esta serie los datos han sido presentados sobre: Distritos electorales por sexo; distritos electorales y subdivisiones censales; sexo, para las divisiones censales (todas las provincias, y sus divisiones políticas mayores y menores); áreas metropolitanas censales; ciudades, pueblos y villorrios; distribución rural y urbana; y grupos de edad. En un apéndice a los boletines de esta serie se encuentran mapas de referencia para cada una de las diez provincias del Canadá, en los cuales se delinean los límites de los condados o de las divisiones censales, según sea el caso.

Concurrently with this series, the Bureau has also published special compilations giving definitive data in summary form for the country and its principal territorial divisions on various population characteristics as follows: Rural and urban population distribution; population by specified origins, specified religions, specified age groups, marital status, and official language and mother tongue.

Additional numbers of both series are being issued as tabulations progress and data become available. (Sources: The above-mentioned publications: Population Bulletins 1-1 —1-11 and Special Compilations 1-6, DBS, Ottawa.)

Simultáneamente a esta serie, la Dirección ha publicado compilaciones especiales en las que se proporcionan, en forma resumida, datos definitivos sobre el país y sus principales divisiones políticas, con respecto a las varias características de la población que siguen: Distribución de la población en rural y urbana; población por determinados orígenes, religiones, grupos de edad, estado civil e idioma oficial y lengua materna.

A medida que progresan las tabulaciones y se dispone de más datos, se están publicando números adicionales de ambas series. (Fuente: Las publicaciones arriba mencionadas: Population Bulletins 1-1—1-11 y Special Compilations 1-6, DBS, Ottawa.)

CHILE

Sampling in relation to census results

• The General Bureau of Statistics of Chile is introducing sampling methods for the processing of results of the Censuses of Population and Housing.

A systematic sample of two per cent of the schedules will be taken after arranging enumeration districts by strata, for the purpose of obtaining: (a) Preliminary results; (b) a relatively small group of schedules for pilot operations, to establish personnel requirements and norms of qualitative control, and to test the effectiveness of the operation; (c) a system through which

Muestreo en relación con los resultados censales

• La Dirección General de Estadística de Chile está introduciendo métodos de muestreo para la elaboración de los resultados de los Censos de Población y Vivienda. Se tomará una muestra sistemática del dos por ciento de las cédulas, después de ordenar los distritos de enumeración por estratos, con el objeto de obtener: (a) Resultados preliminares; (b) un grupo relativamente pequeño de cédulas destinadas a operaciones piloto, a establecer necesidades de personal, normas de control cualitativo y a experimentar sobre la eficiencia de la manipulación; (c) un sistema por medio del cual cualesquiera diferencias inherentes a

any inherent differences in large-scale processing, due to the increased improvement of techniques and experiences, will be distributed at random within the sample and eventually within the universe; and (d) a set of schedules which may be utilized now for special qualitative studies, or later in surveys such as those on population movements, occupational changes, etc. (Source: Luis Cárcamo Cantín, DGE, Santiago, August 1952.)

Sampling in relation to completeness of birth registration

• Three agencies—the General Bureau of Statistics, the National Health Service, and the National Civil Registry—have collaborated in a sample survey on birth registration, carried out simultaneously with the Population and Housing Censuses of 1952.

The administrative units of the civil registry were grouped into 24 strata, on the basis of existing information on the urban-rural characteristics of the areas (3 strata), the percentage of legitimacy (2 strata), and the delay observed in carrying out registration in past years (4 strata). Two areas were selected at random in each stratum. At the time of census-taking, information was secured for each of the 48 areas regarding births which took place within a previously established period of eight months.

After the usual task of comparison with the existing registrations, correlation was made between the percentage of registration (of total

una elaboración en gran escala, debidas al mejoramiento creciente de las técnicas y experiencia acumuladas, serán distribuidas al azar dentro de la muestra y eventualmente dentro del universo; y (d) un juego de cédulas que se puedan utilizar actualmente para estudios cualitativos especiales, o posteriormente, para efectuar investigaciones tales como aquéllas sobre movimientos de población, cambios ocupacionales, etc. (Fuente: Luis Cárcamo Cantín, DGE, Santiago, agosto 1952.)

Muestreo en relación con las inscripciones y el total de nacidos

• Tres organismos—la Dirección General de Estadística, el Servicio Nacional de Salud y el Registro Civil Nacional—han cooperado en un estudio a base de muestra sobre inscripciones de nacimientos, efectuado simultáneamente con los Censos de Población y Vivienda de 1952.

Las circunscripciones del registro civil fueron agrupadas en 24 estratos, a base de la información existente sobre las características urbano-rurales de la circunscripción (3 estratos), porcentaje de legitimidad (2 estratos), y demora observada en efectuar las inscripciones en años anteriores (4 estratos). Al azar, fueron seleccionados dos circunscripciones en cada estrato. En la fecha del levantamiento del censo, fué asegurada información para cada una de las 48 áreas respecto de los nacimientos ocurridos dentro de un período de ocho meses establecido previamente.

Después de las operaciones usuales de confrontación con los registros existentes, se efectuarán correlaciones entre el porcentaje de inscritos (del total de nacidos) y

births) and those factors included in the trial questionnaire which it is believed affect registration. Thus, rather than having to obtain a simple figure showing the number of registrations in relation to the total births, it is expected that by means of such correlation it will be possible to ascertain what factors are associated with or contribute to a decline in registration. Such deductions will permit more direct action to improve birth registration.

One aspect of the correlation work is the study of the relationship between the percentage of registrations (of total births) and the lag with which the registrations are made, after analyzing the factors already mentioned. It is expected that this relationship will be useful in the preparation of inter-censal estimates of population and estimating the number of births. (Source: Luis Cárcamo Cantín, DGE, Santiago, August 1952.)

aquellos factores incluidos en el cuestionario de ensayo que se cree afectan a la inscripción. Así, más bien que la necesidad de obtener una simple cifra mostrando la cantidad de inscritos con relación al total de nacidos, se anticipa que por medio de tal correlación se podrá saber qué factores están asociados o contribuyen a una disminución de la inscripción. Tales deducciones permitirán ejercer una acción más directa para el mejoramiento de las inscripciones de nacimiento.

Un aspecto del trabajo de correlación es la investigación de la relación entre el porcentaje de inscritos (con relación al total de nacidos) y el atraso con que se hacen tales inscripciones, después de analizados los factores discutidos anteriormente. Se anticipa que esta relación será encontrada útil como uno de los elementos necesarios para la confección de estimaciones inter-censales de población y en la estimación del número de nacimientos. (Fuente: Luis Cárcamo Cantín. DGE, Santiago, agosto 1952.)

Personal notes — Noticias personales

• *Sr. Luis Cárcamo Cantín, director general, Dirección General de Estadística,* attended the II Session of the Committee on Improvement of National Statistics (COINS), held in Ottawa, Canada in September-October 1952, and the International Seminar on Statistical Organization held in the same city immediately following the COINS Session. Sr. Cárcamo served as vice president of the COINS Session and was elected as a member of the new Coordinating Board of this Committee.

• *Sr. Adolfo Gaete Darbo, Oficial de Información del Registro Civil, Ministerio de Justicia,* Santiago, has been in Washington, D.C., since August 1952, on a 1-year grant under the training program of the United States National Office of Vital Statistics.

COLOMBIA

Census accuracy checks, by sampling

• In view of the fact that many persons, especially residents of Cartagena, were casting doubts on the accuracy of the 1951 Censuses of Population and Housing, the National Bureau of Statistics decided to conduct two different forms of census checks—the first, through a sample of schedules, to determine whether the information reported in the schedules reflected the true situation; and the second, through a sample of revisits to determine what, if any, sections in the urban area of Cartagena were not enumerated.

The first sample was taken from an array of census returns, with the starting point determined by unrestricted randon selection of 5 per cent, or one out of every 20 returns. From these returns data on family characteristics were obtained.

The second sample was selected by the same procedure, after numbering the blocks in the respective maps, and after stratification for known social conditions. Three strata were established: One covering all wards inhabited by the poorer classes; another covering all wards inhabited by medium-income classes; and the third covering wards inhabited by the high-income groups. (Cartagena is well defined in this respect.)

The check on accuracy was conducted by a commission which revisited, one by one, the addresses of the families included in the sample, with the following results:

1. 90 per cent of the families still lived in the same houses.

Verificaciones censales, por muestreo

• Ante la insistencia de muchas personas y especialmente de algunos vecinos de la ciudad de Cartagena, que afirmaban que los Censos de Población y Edificios tomados en dicha localidad en 1951 habían sido en extremo deficientes, la Dirección Nacional de Estadística resolvió planear dos confrontaciones de carácter diferente—la primera, una muestra de las boletas a fin de constatar si los datos existentes en los formularios coincidían con la realidad; y la segunda, una muestra sobre el terreno a fin de buscar áreas no censadas de la parte urbana del citado municipio.

La primera muestra se tomó de las boletas ordenadas, con punto de partida al azar irrestricto y un 5 por ciento, es decir una de cada 20 boletas. De estas boletas se tomaron las familias con sus características.

La segunda muestra se tomó previa numeración de las manzanas en el respectivo plano y después de haber estratificado de acuerdo con condiciones sociales conocidas. Se hicieron tres estratos: Uno que cubrió el total de los barrios de clases pobres; otro que cubrió el total de los barrios de clases medias; y el último el de las clases altas. (Cartagena está muy bien definida por este aspecto.)

Para efectuar la verificación resultante de la primera muestra, una comisión visitó, una a una, las direcciones de las familias presentes en la muestra, con los siguientes resultados:

1. El 90 por ciento de dichas familias habitaban aún en las mismas casas.

2. 100 per cent of the persons interviewed said that the household had been enumerated in the 1951 Censuses, and that, except for some errors in some of the characteristics investigated, the answers were correct.

For the check on coverage the following method was used: One out of every three houses in the blocks selected in the sample was selected, and the complete census information for each was entered on the schedule.

Of these persons, 86 per cent were still living in the same house which they had occupied in 1951. In all, 500 families were studied, comprising a total of 4,852 persons. Only one family, of five persons, reported that it was not interviewed in the 1951 Census, although living in the same house.

In the light of these two checks, the National Bureau of Statistics has concluded that the city of Cartagena received complete coverage, and that any omissions which may have occurred can be considered of too little consequence to justify the statement that the Censuses of Population and Housing in Cartagena were poorly done. (Source: Bernardo Ruiz, DNE, Bogotá, October 1952.)

Monthly statistical bulletin

• The National Bureau of Statistics (DNE) of Colombia is now publishing a *Boletín Mensual de Estadística* which supersedes the *Boletín Informativo,* a monthly publication started in March 1951. The first issue of the new Boletín appeared for August 1952 and bears the number 18, presumably continuing the series

2. El 100 por ciento de las personas encontradas manifestaron que la habitación había sido empadronada en los Censos de 1951 y, salvo algunos errores en algunas de las características investigadas, lo demás fué encontrado correcto.

Para la segunda muestra el método fué el siguiente: Una vez ubicadas las manzanas que resultaron sorteadas, se tomó una de cada tres casas y se hizo la investigación completa, llenando las boletas censales en su totalidad.

De estas personas un 86 por ciento vivían aun en la misma casa en que habitaron en 1951. Se lograron 500 familias con un total de 4,852 personas, y solamente una familia de cinco personas manifestó no haber sido censada en 1951 a pesar de vivir en la misma casa.

Después de estas dos confrontaciones, la Dirección Nacional de Estadística ha llegado a la conclusión de que la ciudad fué cubierta en su totalidad por el empadronamiento y que a pesar de que pueden existir omisiones, éstas no son tan considerables como para afirmar que los Censos de Población y Edificios de Cartagena fueron mal hechos. (Fuente: Bernardo Ruiz M., DNE, Bogotá, octubre 1952.)

Boletín mensual de estadística

• La Dirección Nacional de Estadística (DNE) de Colombia está publicando un *Boletín Mensual de Estadística,* que viene a reemplazar el *Boletín Informativo,* publicación mensual comenzada en marzo de 1951. La primera edición del nuevo Boletín apareció en agosto de 1952 y lleva el número 18, presumiblemente para continuar los números

numbers of its predecessor. According to its preface, this publication aims to present current data on demography, industrial production, international trade, transportation, cost of living, prices, wages, movements of real estate, and public income and expenditures, as well as occasional special information obtained through various surveys carried out by the DNE. Comparative data for previous periods will be carried in each issue. (Source: *Boletín Mensual..*, DNE, August 1952.)

de la serie de su predecesor. De acuerdo con su prefacio, esta publicación se propone presentar datos actuales sobre demografía, producción industrial, comercio internacional, transportes, costo de vida, precios, salarios, movimientos de la finca raíz e ingresos y gastos públicos, así como informaciones especiales ocasionales obtenidas mediante diversas investigaciones llevadas a cabo por la DNE. En cada edición se presentarán datos comparativos con períodos anteriores. (Fuente: *Boletín Mensual...*, DNE, agosto 1952.)

Personal notes — Noticias personales

• In attendance at the International Seminar on Statistical Organization held in Ottawa, Canada, in October 1952, was *Sr. Bernardo Ruiz Martínez,* of the *Dirección Nacional de Estadística.*

• *Mr. Omer A. Lemieux,* statistical consultant on census problems for the United Nations, on loan from the Dominion Bureau of Statistics in Canada, has been in Bogotá since June 1952 on a 1-year assignment with the Government of Colombia.

COSTA RICA

Price indexes

• The General Bureau of Statistics and Censuses is now presenting in a bulletin titled *Indice de Precios para el Consumidor Medio y Obrero de San José,* monthly price index data for the middle and wage-earner class of consumer in San José. This information is under the charge of the recently created Section of Price Indexes.

The index has been calculated based on weights resulting from a study of family expenditures which the DGE carried out in September 1949 on a group of 258 families in

Indices de precios

• La Dirección General de Estadística y Censos está presentando actualmente en un boletín titulado *Indice de Precios para el Consumidor Medio y Obrero de San José,* datos mensuales del índice de precios para los consumidores medio y obrero de San José. Esta información está a cargo de la Sección de Indices de Precios, recientemente creada.

El índice ha sido calculado con base en ponderaciones resultantes de un estudio de los gastos familiares que la Dirección de Estadística llevó a cabo en septiembre de 1949,

the city of San José and surrounding area. The 144 items used were selected according to their relative importance among all expenses of the family group studied, and were divided into six main categories: Food, clothing, housing, electricity-fuel-ice, household furnishings and equipment, and miscellaneous. Within the last-named group are included such subgroups as cleaning and maintenance, medicine, personal care, entertainment, education, transportation, and social security expenses.

To date, three issues of the *Indice* have appeared: July 1952, covering the months of February through June; August 1952, covering July and August; and October 1952, covering September. Explanatory notes on the methodology appear in the first issue. (Sources: Flora Díaz Jiménez, DGE, San José, November 1952; *Indice de Precios...*)

Instructions to physicians

• The General Bureau of Statistics, together with the Bureau of Public Health of Costa Rica, has released a manual of instructions titled *Instrucciones a los Médicos para Llenar el Certificado de Defunción,* which contains the new death certificate for physicians' use and pertinent instructions approved and recommended by the World Health Assembly in its meeting of July 1948, for use of member states of the World Health Organization. The purpose of the certificate is to improve the sources of statistical data

sobre un grupo de 258 familias de la ciudad de San José y área circunvecina. Los 144 artículos utilizados fueron escogidos de acuerdo con su importancia relativa entre todos los gastos del grupo de familias estudiado, y fueron divididos en seis categorías principales: Alimentos, vestuario, vivienda, electricidad-combustibles-hielo, enseres domésticos, y misceláneos. Dentro del último grupo mencionado se incluyen subgrupos tales como limpeza y mantenimiento, cuidados médicos, cuidados personales, diversiones, educación, transportes y cuotas del seguro social.

Hasta la fecha, han aparecido tres ediciones del *Indice*: Julio de 1952, que cubre los meses de febrero a junio; agosto de 1952, que cubre julio y agosto; y octubre de 1952, que cubre septiembre. En la primera edición se encuentran notas explicativas sobre la metodología empleada. (Fuentes: Flora Díaz Jiménez, DGE, San José, noviembre 1952; *Indice de Precios...*)

Instrucciones a los médicos

• La Dirección General de Estadística juntamente con la Dirección de Salubridad Pública de Costa Rica, ha publicado un manual de instrucciones titulado *Instrucciones a los Médicos para Llenar el Certificado de Defunción* que contiene el nuevo certificado médico de defunción y la reglamentación respectiva aprobados y recomendados por la Asamblea Mundial de la Salud en su reunión de julio de 1948, para uso de los estados miembros de la Organización Mundial de la Salud. Dicho certificado tiene por objeto mejorar las fuentes de datos estadísticos a fin

so that better national and international comparability may be obtained. The new manual includes several examples of correct medical certification and an appendix containing a special list of causes of death requiring complementary information for the cases cited. (Source: *Instrucciones a los Médicos...*, DGE and the Bureau of Public Health, San José, May 1951.)

de alcanzar una mejor comparabilidad en el orden nacional e internacional. En el citado manual se incluyen varios ejemplos de correcta certificación médica y un apéndice que contiene una lista especial para los procesos morbosos que exigen información complementaria. (Fuente: *Instrucciones a los Médicos ...*, DGE y Dirección de Salubridad Pública, San José, mayo 1951.)

Personal notes — Noticias personales

• Attending the II Session of the Committee on Improvement of National Statistics (COINS), held in Ottawa, Canada, September-October 1952, were *Sres. Wilburg Jiménez Castro, director general de la Dirección General de Estadística* (DGE) and *Raúl Hess Estrada, jefe de la Sección de Estadística y Economía Agrícola* of the DGE. Sr. Jiménez also attended the International Seminar on Statistical Organization which was held in Ottawa immediately following the COINS Session.

• *Srta. María Cristina Camacho* and *Sr. Lidio Donato Sauteriano* of the *Departamento Actuarial y Estadístico, Agencia de Seguro Social*, San José, have been in Washington, D.C., since June 1952 on a 1-year training grant from the United States Bureau of Labor Statistics. *Sr. Adrián Cartín Cambronero* of the *Sección Industrial y Comercial* of the DGE, arrived in July 1952 for training under the same type of grant.

CUBA

Personal notes — Noticias personales

• *Dr. Rodolfo Masferrer Rojas, director general, Dirección General de Estadística y Censos*, attended the II Session of the Committee on Improvement of National Statistics (COINS), held in Ottawa, Canada, September-October 1952. He also participated in the International Seminar on Statistical Organization held in the same city immediately following the COINS Session. On his return trip to Cuba, Dr. Masferrer visited the IASI Secretariat in Washington, D.C.

DOMINICAN REPUBLIC

Statistical activities

• In a publication titled *Las Actividades Estadísticas de la República Dominicana* (September 1952, 35 p.) the General Bureau of Statistics (DGE) of the Dominican Republic presents an over-all picture of the national statistical organization and activities through the years. The contents include: A brief summary of the historical development of statistics in the country; organization of the official statistical system including basic legislation; publications isued by the DGE; budget; the census program, including a brief history of national censuses, with especial emphasis on the preparations, methodology, and current status of the 1950 census; participation of the Dominican Republic in international statistical conferences and technical assistance and training programs; and facilities for statistical education in the country. (Source: *Las Actividades Estadísticas* . . .,DGE, September 1952.)

Actividades estadísticas

• En una publicación titulada *Las Actividades Estadísticas de la República Dominicana* (septiembre de 1952, 35 p.), la Dirección General de Estadística (DGE) de la República Dominicana presenta un panorama general de la organización estadística nacional y las actividades al través de los años. El contenido incluye: Un resumen del desarrollo histórico de la estadística en el país; organización del sistema estadístico oficial incluyendo la legislación básica; publicaciones editadas por la DGE; presupuesto; el programa censal, incluyendo una historia breve de los censos nacionales, con énfasis especial en los preparativos, metodología y la situación actual del censo de 1950; participación de la República Dominicana en conferencias estadísticas internacionales y en programas de asistencia técnica y entrenamiento; y facilidades para la educación estadística en el país. (Fuente: *Las Actividades Estadísticas* . . ., DGE, septiembre 1952.)

Personal notes — Noticias personales

• *Sr. Abelardo Elías Achécar* has been appointed *director general* of the *Dirección General de Estadística,* as of September 1952, succeeding *Dr. Salvador Aybar Mella* in this post. Sr. Achécar, who was formerly *jefe* of the *Oficina Nacional del Censo* has been replaced in that capacity by *Sr. Milcíades Herrera Báez.*

Sr. Achécar was in the United States from 1944 to 1947, for specialized training in vital statistics and censuses. He received the degree of Master of Public Health from Johns Hopkins University in 1946, and also took some courses at the University of Michigan. Through the years, he has represented his country in most of the inter-American statistical conferences which have been held, including those of the Committee on the 1950 Census of the Americas (COINS), and of the Committee on

Improvement of National Statistics. He recently attended the International Seminar on Statistical Administration, held in Canada in October 1952.

Sr. Herrera Báez received specialized training in the United States in economic statistics, at Columbia University, and in agricultural statistics and censuses, in Washington, D.C. Sr. Herrera Báez also attended the II Session of COINS, and the International Seminar on Statistical Administration, held in Ottawa in September and October 1952.

ECUADOR

Population census results, 1950

• Definitive population counts, for the nation as a whole and by provinces, from the First National Census of Population of Ecuador, taken on November 29, 1950, were released by the General Bureau of Statistics and Censuses of that country in August 1952. Separate leaflets on the detailed characteristics of the population have appeared previously for the individual provinces as follows: In December 1951: Carchi, Cañar, Bolívar, Cotopaxi, Imbabura; in May 1952: Loja, Tungurahua, Chimborazo, El Oro; in August 1952: Santiago-Zamora, Azuay, Napo Pastaza, Esmeraldas, Los Ríos and Pichincha. Volumes on Manabí, Guayas, and the Galápagos Islands, have not yet been distributed. Each volume in the series contains data on: Population by age and sex, civil status, literacy, population economically active and inactive. Additional data for each province will be released later covering educational level of the population, place of

Resultados del censo de población, 1950

• La Dirección General de Estadística y Censos del Ecuador, ha publicado en el mes de agosto de 1952, las cifras definitivas, para la nación como un todo y por provincias, del Primer Censo Nacional de Población, levantado el 29 de noviembre de 1950. Con anterioridad habían aparecido boletines separados con información detallada sobre las características de la población para las provincias consideradas individuales, como sigue: En diciembre de 1951: Carchi, Cañar, Bolívar, Cotopaxi, Imbabura; en mayo de 1952: Loja, Tungurahua, Chimborazo, El Oro; en agosto de 1952: Santiago-Zamora, Azuay, Napo Pastaza, Esmeraldas, Los Ríos, y Pichincha. Aun no han sido distribuidos los volúmenes correspondientes a Manabí, Guayas, y el Archipiélago de Colón. Cada número de la serie contiene datos sobre: Población por edad y sexo, estado civil, alfabetismo, población económicamente activa e inactiva. Más adelante se dará a conocer información adicional para cada provincia cubriendo nivel

birth, nationality, occupation, physical defects, family-group relationships, and cultural and housing characteristics. (Sources: *Resultados Definitivos del Censo Nacional de Población* ... and *Boletín de Información Censal* no. 1-15, DGE, Quito, 1951-1952.)

educacional de la población, lugar de nacimiento, nacionalidad, ocupación, defectos físicos, relación con el jefe de familia, y características culturales y de la vivienda. (Fuentes: *Resultados Definitivos del Censo Nacional de Población* ... y *Boletín de Información Censal,* No. 1-15, DGE, Quito, 1951-1952.)

Personal notes — Noticias personales

• *Sr. Luis F. López Muñoz, director general, Dirección General de Estadística y Censos,* attended the II Session of the Committee on Improvement of National Statistics (COINS), held in Ottawa, Canada, September-October 1952, as well as the International Seminar on Statistical Organization held in the same city immediately following the COINS Session.

EL SALVADOR

Statistical reorganization

• The Government of El Salvador has undertaken this year (1952) a program of reorganization of the national statistical services. In this connection, two technicians from abroad have been engaged since the beginning of the year in the development of an intensive program of improving the national statistics.

The principal phases of this program are: (1) Reclassification of foreign trade statistics, applying the Standard International Trade Classification (SITC) of the United Nations; (2) publication of the bimonthly *Boletín Estadístico*; (3) reorganization of all statistical data processed by the General Bureau of Statistics and Censuses (DGE); (4) coordination and unification of

Reorganización estadística

• El gobierno de El Salvador, ha emprendido este año (1952) un programa de reorganización de los servicios estadísticos nacionales. Con tal objeto han sido contratados dos asesores técnicos extranjeros, los que desde comienzos del corriente año han venido desarrollando un programa intensivo de mejora de las estadísticas nacionales.

Los principales aspectos a que responde este programa, son los siguientes: (1) Reclasificación de las estadísticas del comercio exterior, aplicándose la Clasificación Uniforme para el Comercio Internacional (CUCI), de las Naciones Unidas; (2) publicación de un *Boletín Estadístico,* en forma bimestral; (3) reorganización de todas las estadísticas elaboradas por la Dirección General de Estadística y Censos (DGE); (4)

working methods of all agencies comprising the national statistics service; (5) cooperation among the statistical teaching agencies of the University of El Salvador; (6) formulation of training programs to raise the technical level of DGE personnel; (7) other related activities, such as close observation of the progress of the current Industrial and Commercial Census, construction of new price indexes, etc.

The following tasks have been accomplished to date:

1. *Application of the SITC.* El Salvador has already worked out its conversion key for reclassifying its foreign trade in accordance with the SITC. The key was corrected by the Statistical Office of the United Nations, and data on exports and imports of the current year are now being tabulated. The old classification based on the Brussels Nomenclature will also continue to be published.

2. *Boletín Estadístico.* Publication of a bimonthly statistical bulletin was begun in January 1952, and the following issues have been released to date: 1, 2, 3, and 4 (in press). The material and contents of each issue have been greatly improved and series are now included on foreign trade, demography, censuses, migration, banking and monetary statistics, public finances, meteorology, prices, transportation, construction, and consumption.

coordinación y unificación de métodos de trabajo de todos los organismos nacionales que componen el servicio estadístico nacional; (5) cooperación en los organismos de enseñanza estadística de la Universidad Autónoma de El Salvador; (6) formulación de programas de entrenamiento para elevar el nivel técnico del personal de la DGE; (7) otras actividades relacionadas, como ser, vigilar el desarrollo del actual Censo Industrial y Comercial, Construcción de nuevos índices de precios, etc.

Hasta el momento se han llevado a cabo las siguientes tareas:

1. *Aplicación de la CUCI.* El Salvador ya ha elaborado su índice de conversión para reclasificar su comercio exterior de acuerdo a la Clasificación Internacional. El índice de conversión fué corregido por la Oficina de Estadísticas de las Naciones Unidas, y actualmente se tabulan los datos referentes al corriente año para exportaciones e importaciones. Se seguirá publicando también la clasificación anterior basada en la Nomenclatura de Bruselas.

2. *Boletín Estadístico.* Se ha publicado en forma bimensual a partir del mes de enero del corriente año un boletín estadístico, habiendo aparecido hasta la fecha los siguientes números: 1, 2, 3, y 4 (en prensa). El material y contenido de cada número se ha perfeccionado en sumo grado y en la actualidad se incluyen series sobre comercio exterior, demografía, censos, movimiento migratorio, estadísticas bancarias y monetarias, finanzas públicas, meteorología, precios, transportes, construcciones, y consumo.

3. *Reorganization of statistics of the DGE.* The following fields have been given particular attention: Foreign trade; demography; money and banking; court statistics and health statistics; transportation; prices; etc.

With respect to foreign trade, a study has been made of methods of collection, definitions used, methods of valuation, determination of quantities, etc. The pertinent standards have been indicated, and the *Boletín Estadístico* contains the definitions and concepts applied in the country to import and export figures. Anomalies have been corrected, such as the omission of imports by the Government and official institutions. Working methods, detailed customs procedures, etc. have been coordinated with the Customs Bureau for the purpose of improving and refining data from customs documents.

In demographic statistics, entirely new methods for the improved collection and compilation of data on births, deaths, etc. have been laid down. These standards will be applied beginning in 1953 and are published in "Comentarios Estadísticos" of the DGE.

In the remaining fields similar surveys have been made, the results of which are being incorporated progressively, in the statistics published in the *Boletín Estadístico.*

4. *Coordination of the national statistical service.* The defects of the national statistical service were very carefully studied, further information regarding methodology of other Latin-American countries on the subject was secured, and two representatives of the DGE attended the

3. *Reorganización de las estadísticas de la DGE.* Han merecido mayor atención los siguientes aspectos: Comercio exterior; demografía; moneda y banca; estadísticas judiciales y sanitarias; transportes; precios; etc.

En lo que respecta al comercio exterior, se investigaron los métodos de recolección, definiciones empleadas, métodos de valuación, determinación de cantidades, etc. Se dieron las normas pertinentes, y el *Boletín Estadístico* contiene las definiciones y conceptos aplicados en el país a las cifras de importación y exportación. Se han corregido anormalidades como ser la no inclusión de las importaciones del Gobierno e instituciones oficiales, etc. Se han coordinado con la Dirección General de Aduanas, métodos de trabajo, detalles de procedimientos aduaneros, etc., para mejorar y pulir las informaciones de los documentos aduaneros.

En estadísticas demográficas se han delineado procedimientos totalmente nuevos para la mejor recolección y concentración de datos de nacimientos, defunciones, etc. Estas normas serán aplicadas a partir del año 1953, y se publican en "Comentarios Estadísticos" de esta DGE.

En los demás rubros se ha hecho una investigación similar y sus resultados se incorporan progresivamente en las estadísticas publicadas en el *Boletín Estadístico.*

4. *Coordinación del servicio estadístico nacional.* Se estudió con todo detenimiento los defectos del servicio estadístico nacional, se amplió la información con respecto a los métodos de otros países latinoamericanos en la materia, y fueron enviados dos representantes de esta

II Session of the Committee on the Improvement of National Statistics in Ottawa, Canada, in October 1952. The study made to date has indicated the advisability of carrying out a program to achieve mutual understanding among the different institutions which process statistical data, rather than creating a new and more complicated system. A National Statistical Conference has been called for the purpose of establishing coordinating committees which will assume the technical direction of national statistical studies with respect to methods of collection, compilation of data, delineating areas of responsibility, coordinating activities, and avoiding duplication.

5. *Cooperation in statistical teaching.* A course in statistical methodology, now in its fourth year, has been given in the School of Economics of the University, based principally on the program of subject matter taught in previous years in the curriculum of mathematical statistics at the School of Economic Sciences, Rosario, Argentina.

The remaining phases of the improvement program are being developed gradually in accordance with the plans outlined. (Source: Walter L. Koller, DGE, San Salvador, October 1952.)

Industrial census

• In compliance with Executive Decree No. 174, of July 29, 1952, the General Bureau of Statistics and Censuses (DGE) of El Salvador is preparing to take, in 1952, this country's First Industrial and Commercial Census, covering the year

Oficina a la II Sesión de la Comisión de Mejoramiento de las Estadísticas Nacionales, celebrada en Ottawa, Canadá, en octubre de 1952. La investigación realizada hasta la fecha ha aconsejado llevar a cabo un programa de entendimiento mutuo entre las diversas instituciones que elaboran estadísticas en lugar de crear un nuevo sistema más complicado. Por el momento, se ha convocado una Conferencia Nacional de Estadística, con el objeto de dejar establecidas comisiones de coordinación que tendrá la dirección técnica de las investigaciones estadísticas nacionales, en cuanto a métodos de recolección, concentración de datos, y delineamiento de atribuciones, coordinando actividades y evitando las duplicaciones.

5. *Cooperación en la enseñanza estadística.* En la Facultad de Economía de la Universidad, se ha venido dictando un curso de Estadística Metodológica, para el cuarto año, basado principalmente en el programa de la materia dictado años anteriores en la carrera de estadístico matemático de la Facultad de Ciencias Económicas de Rosario, Argentina.

Los demás rubros mencionados, se están desenvolviendo progresivamente, de acuerdo al programa trazado. (Fuente: Walter L. Koller, DGE, San Salvador, octubre 1952.)

Censo industrial

• En cumplimiento del Decreto Ejecutivo No. 174, del 29 de julio de 1952, la Dirección General de Estadística y Censos (DGE) de El Salvador se está preparando para levantar en 1952, el primer Censo Industrial y Comercial del país, cubriendo las operaciones del año

1951. Under this Decree the DGE is charged with formulating the procedures and determining the successive steps of the work. Further provisions governing this Census are contained in Legislative Decree No. 716, "Enumeration Law for the First Industrial and Commercial Census," also passed in July 1952.

Observations concerning the scope of the Census and definition of concepts are contained in the article "Sección del Censo Industrial y Comercial: Lo Que Es Un Censo Industrial," published in *Boletín Estadístico* No. 1 of the DGE, for January-February 1952. According to these notes, the compilation of a Directory of Establishments, constituting one of the basic preparatory steps for an industrial census, was started in October 1951. (Sources: Jorge Tenorio, DGE, August 1952; *Boletín Estadístico,* No. 1, DGE.)

1951. De conformidad con este Decreto, la DGE está encargada de formular los procedimientos y de determinar las sucesivas etapas del trabajo. El Decreto Legislativo No. 716, "Ley de Empadronamiento para el Primer Censo Industrial y Comercial," aprobado tambiém en julio de 1952, contiene providencias adicionales que regulan este Censo.

En el *Boletín Estadístico* No. 1 de la DGE, correspondiente a enero-febrero de 1952, se encuentra el artículo "Sección del Censo Industrial y Comercial: Lo Que Es Un Censo Industrial," el cual contiene observaciones relacionadas con el alcance del Censo y las definiciones de los conceptos. De acuerdo con estas notas, en octubre de 1951 se inició la compilación de un Directorio de Establecimientos, lo cual constituye una de las medidas preparatorias básicas para un censo industrial. (Fuentes: Jorge Tenorio, DGE, agosto 1952; *Boletín Estadístico* No. 1., DGE.)

Personal notes — Noticias personales

- In February 1952, *Sr. Salomón Martínez Alemán* was appointed to the post of *sub-director general* of the *Dirección General de Estadística* (DGE) of El Salvador.

- *Sr. Luis B. Ortiz C., asesor técnico* in the DGE, and Sr. Martínez attended the II Session of the Committee on Improvement of National Statistics and the International Seminar on Statistical Administration, held in Ottawa, Canada, in September and October 1952. En route back to their country, both visited the Secretariat of IASI in Washington, D.C.

- *Sr. Guillermo Napoleón Fuentes, jefe de la Sección de Comercio Exterior* of the DGE, visited Detroit, Michigan, U.S.A., for approximately three months early in 1952 to study microfilm techniques and mechanical equipment methods.

- *Sr. Luis Raúl Rodríguez V.,* of the DGE, has been in Mexico, D.F. for the purpose of making special studies in statistics. *Sr. Victor Manuel Mendoza* and *Sr. José Angel Flamenco* also of the DGE were in Mexico,

D.F. from April to June 1952 to attend a course of technical instruction in tabulating machine methods (Powers equipment).

• *Sr. Félix Costa García,* Colombian technician in organization of National Focal Points, is now *encargado de la Sección de Punto Focal Nacional,* under contract to the DGE of El Salvador.

• Mr. *Melville A. Taft, Jr.,* consultant on the staff of the U.S. National Office of Vital Statistics, left Washington, D.C., in November 1952 to serve as a consultant to the Government of El Salvador under the Point IV Program of the United States.

GUATEMALA

Critique on statistical research

• *La Investigación Estadística en Guatemala* (Statistical Research in Guatemala), a thesis presented by Raúl Sierra Franco to the Faculty of Economic Sciences of the University of San Carlos, Guatemala, toward the degree of Licenciado in Economics, constitutes a chronological summary of official efforts made through the years toward compiling and interpreting statistics relating to the national economy. The work presents a technical exposition as well as personal critiques of the subjects treated, and is divided into the following chapters: Historical background; economic statistics; industrial statistics; statistics of production and consumption; statistics of municipal income; financial statistics; transportation statistics; foreign trade statistics; labor statistics; banking statistics; vital statistics; migration statistics; social, legal, and cultural statistics; agricultural statistics; and other special activities. In the final chapter the

Crítica de Investigaciones estadísticas

• *La Investigación Estadística en Guatemala,* por Raúl Sierra Franco, tesis presentada por el autor a la Facultad de Ciencias Económicas de la Universidad de San Carlos, Guatemala, para optar al título de Licenciado en Economía, constituye una enumeración cronológica de los esfuerzos oficiales encaminados a través de los años a compilar e interpretar las estadísticas relativas a la economía nacional. Abarca exposiciones de carácter técnico así como juicios personales o críticos sobre los temas tratados, dividiéndose la obra en los siguientes capítulos: Antecedentes históricos; estadísticas económicas; industriales; de producción y consumo; de rentas municipales; fiscales; de transportes; de comercio exterior; de trabajo; bancarias; vitales; de migración; sociales, judiciales y culturales; agropecuarias; y otras actividades especiales. En el capítulo final se resumen las anomalías encontradas y se dan

problems encountered are summarized and possible means for their solution are given. The author is at present director general of national statistics in Guatemala. (Source: *La Investigación Estadística* ..., Guatemala, March 1952.)

las posibles medidas para solucionarlas. El autor actualmente es director general de estadística nacional en Guatemala. (Fuente: *La Investigación Estadística* ..., Guatemala, marzo 1952.)

Indexes of industrial production

• *Boletín* No. 37 of the General Bureau of Statistics (DGE) of Guatemala for June 1952 includes indexes of industrial production, covering consumer goods and durable goods, by industrial groups, for the years 1947 through 1951, and for the months of January through April 1952. The base year used is 1946, and the data are drawn from the following industry groups: (1) Consumer goods: Food, beverages, tobacco, chemical industries, hides and skins, textiles, clothing, and electricity; (2) durable goods: Wood, nonmetallic minerals, and metals.

Descriptive notes on the scope and the underlying methodology of this index may be found in: *Boletín* of the DGE, No. 27, October 1950, p. 19-20; and *La Investigación Estadística en Guatemala,* by Raúl Sierra Franco, 1952, p. 40-47. (Sources: *Boletín,* DGE, No. 27 and 37; *La Investigación Estadística* ...)

Indices de la producción industrial

• El *Boletín* No. 37, junio de 1952, de la Dirección General de Estadística (DGE) de Guatemala incluye índices de la producción industrial, tanto de bienes de consumo como duraderos, por grupos industriales, para los años 1947 a 1951, y para los meses de enero a abril de 1952. El año base utilizado es 1946, y los datos han sido tomados de los siguientes grupos industriales: (1) Bienes de consumo: Alimentos, bebidas, tabaco, industrias químicas, pieles y cueros, textiles, vestidos y electricidad; (2) bienes duraderos: Maderas, minerales no metálicos y metales.

Notas descriptivas sobre el alcance y la metodología empleada en el cálculo de este índice, se pueden encontrar en: *Boletín* de la DGE, No. 27, octubre de 1950, p. 19-20; y *La Investigación Estadística en Guatemala,* por Raúl Sierra Franco, 1952, p. 40-47. (Fuentes: *Boletín* de la DGE, No. 27 y 37; *La Investigación Estadística* ...)

Personal notes — Noticias personales

• In attendance at the II Session of the Committee on Improvement of National Statistics, held in Ottawa, Canada, September-October 1952, were *Sres. Raúl Sierra Franco, director general, Dirección General de Estadística* (DGE), and *Jorge Arias B., asesor técnico,* of the DGE.

HAITI

Personal notes — Notes personnelles

• *Mr. François Georges* has been appointed director general of the *Institut d'Assurances Sociales* of Haiti, which was launched in September 1952. The Institut has taken out an institutional membership in the Inter American Satistical Institute.

• *Mr. Maurice Léon Pierre* has been appointed chief of the *Section des Statistiques, Département du Travail,* and *Mr. Joseph F. Pierre-Louis* has been named as assistant chief. Mr. Pierre-Louis received specialized training in labor statistics, from the U.S. Bureau of Labor Statistics in 1949.

• *Dr. Lucien Hibbert, directeur général, Institut Haitien de Statistique,* attended the II Session of the Committee on Improvement of National Statistics (COINS), held in Ottawa, Canada in September-October 1952, and the International Seminar on Statistical Organization held in the same city immediately following the COINS Session.

• Two employees in the *Département de l'Agriculture,* Port-au-Prince, *Messrs. Louis Fernand Balmir* and *Marc Jean-Michel,* who have completed 1-year periods of training in agricultural statistics, with the U.S. Department of Agriculture (1950-51 and 1949-50, respectively), are now (December 1952) studying at the University of Wisconsin. Other technicians from Haiti now studying with the U.S. Office of Business Economics are *Messrs. Paul Joseph Chrétien, Banque Nationale de la République d'Haiti,* and *Maurice E. Saurel, Institut Haitien de Statistique.* Mr. Chrétien arrived in Washington, D.C., September 1952 for a stay of one year, and Mr. Saurel arrived in October 1952 for six months. Also in Washington, D.C. from Port-au-Prince is *Mr. Jean P. D. Plaisir, Bureau de Recensement, Institut Haitien de Statistique,* who has been receiving training in the U.S. Bureau of the Census, since March 1952.

HONDURAS

Statistical training activities

• During the month of September 1952, a course on basic statistics in foreign trade was given at the General Bureau of Revenue for the training of employees concerned with foreign trade statistics in both the Bureau of Revenue and the General

Actividades de entrenamiento estadístico

• Durante el mes de septiembre de 1952, en la Dirección General de Rentas se dictó un curso sobre estadísticas básicas de comercio exterior, al que asistió el personal de la Sección de Estadística de Comercio Exterior de la Dirección General de Rentas y algunos empleados de la

Bureau of Statistics (DGE). This course was taught by Dr. Manuel Tosco. Another course, under Sr. Rodolfo Lanza Valeriano, is being given in the DGE on mechanical tabulation methods, to train the personnel responsible for tabulation of results of the Census of Agriculture taken in 1952.

• A night course is also being given by the DGE in collaboration with Technical Advisers in statistics in Honduras under the Point IV Program, to give statistical instruction to the respective supervisory employees of the DGE. This course emphasizes the duties and needs of the administrative operation of an effective statistical office. The instructors are Dr. Benjamín Gura and Mr. Alford Archer, both of whom are serving as consultants to the DGE's in Honduras, El Salvador, Nicaragua, and Costa Rica.

• Dr. Manuel Tosco is also teaching a course in the Central Bank on national income. Personnel from both the Bank and the DGE are participating in this course. (Sources: José Mario Vijil, DGE; J. B. Rothrock, IASI, Tegucigalpa, November 1952.)

Other statistical activities

• Among the statistical publications issued by the Central Bank of Honduras during 1952 were the following: (1) *Deuda Pública de Honduras, 1924-25—1950-51* (53 p.), prepared by Manuel Tosco in collaboration with others. This publication, which appeared in October 1952, presents an analysis of the internal and foreign debt of the country for

Dirección General de Censos y Estadísticas (DGE). Dicho curso estuvo a cargo del Dr. Manuel Tosco. Otro curso, dirigido por el Sr. Rodolfo Lanza Valeriano, sobre métodos de tabulación mecánica, se está dictando en la DGE para entrenar al personal encargado de la tabulación de los resultados del Censo Agropecuario levantado en 1952.

• La DGE, en colaboración con los Asesores Técnicos de la Oficina del Punto IV, ha empezado también a dar un curso nocturno de instrucciones y entrenamiento estadísticos a sus empleados supervisores. Este curso hace hincapié en las labores y necesidades de las operaciones administrativas de una oficina estadística eficiente. Los instructores son el Dr. Benjamín Gura y el Sr. Alford Archer, consultores de las DGE de Honduras, El Salvador, Nicaragua y Costa Rica.

• El Dr. Manuel Tosco también se encuentra dictando un curso sobre ingreso nacional en el Banco Central, en el cual participan empleados del Banco y de la DGE. (Fuentes: José Mario Vijil, DGE; J. B. Rothrock, IASI, Tegucigalpa, noviembre 1952.)

Otras actividades estadísticas

• Entre las publicaciones estadísticas emitidas por el Banco Central de Honduras durante el año de 1952, figuran las siguientes: (1) *Deuda Pública de Honduras, 1924-25—1950-51* (53 p.), preparada por Manuel Tosco en colaboración con otros. Esta publicación, aparecida en octubre de 1952, presenta un análisis de las deudas interna y externa del

the fiscal years indicated. (2) *Estadísticas Básicas de Comercio Exterior, Series Revisadas* (37 p.). (3) *Origen y Progreso de las Investigaciones sobre Renta Nacional,* a 7-page exposition on the background and present status of national income studies in Honduras.

• The General Bureau of Censuses and National Statistics (DGE) distributed in October 1952 the volume *División Político-Territorial de la República de Honduras, 1951* (327 p.), which gives the political and territorial divisions of the country, with maps and a brief background exposition for each Department, and a tabular list of the political subdivisions of each. (Source: José Mario Vijil, DGE, Tegucigalpa, November 1952.)

país en los años económicos indicados. (2) *Estadísticas Básicas de Comercio Exterior, Series Revisadas* (37 p.). (3) *Origen y Progreso de las Investigaciones sobre Renta Nacional,* una exposición de 7 páginas sobre los antecedentes y situación actual de los estudios de renta nacional en Honduras.

• La Dirección General de Censos y Estadística Nacional (DGE) distribuyó en octubre de 1952 la obra *División Político-Territorial de la República de Honduras, 1951* (327 p.), que proporciona las divisiones políticas y territoriales del país, con mapas y breves datos históricos de cada uno de los Departamentos, y una lista tabular de las subdivisiones políticas de cada uno de ellos. (Fuente: José Mario Vijil, DGE, Tegucigalpa, noviembre 1952.)

Personal notes — Noticias personales

• Recent appointments on the staff of the *Dirección General de Censos y Estadísticas* are: *Rodolfo Zúñiga V., jefe del Departamento de Estadísticas Continuas; Roberto H. Rosales, jefe del Departamento de Censos; Rodolfo Lanza Valeriano, jefe del Departamento de Tabulación;* and *José Mario Vijil, jefe del Departamento de Coordinación y Punto Focal.* Each of the four appointees has received some supplementary statistical training outside of his own country.

MEXICO

Personal notes — Noticias personales

• Sr. *Gilberto Loyo G.,* who has held the post of *director general de la Dirección General de Estadística* of Mexico since 1946, has been recently appointed *Ministro de la Economía Nacional.* Sr. Loyo has been active in the sphere of national statistics of Mexico for many years. He was director of the national censuses of 1940 and 1950, was a participant at a number of international statistical conferences in that decade, and served on the Committee on the 1950 Census of the Americas during the full period of its existence. He is a member of both the Inter American Statistical Institute and the International Statistical Institute.

• *Sr. Rodolfo Flores Talavera,* who was formerly *jefe de la Oficina Central de Control del Censo de Población,* succeeds Sr. Loyo as director general of statistics of Mexico.

• *Sr. Rubéns Gleason G.,* of the *Nacional Financiera, S. A.,* Mexico, D.F., arrived in Washington, D.C., in August 1952 for a 1-year stay in Washington, D. C., with the U. S. Office of Business Economics, to study national income. *Sr. José Nieto de Pascual,* of the *Dirección General de Estadística,* returned to Mexico in November 1952, terminating a 1-year period of training with the U.S. Bureau of the Census in Washington, D.C.

PANAMA

Agricultural census results

• General results of the 1950 Agricultural Census of Panama were released by the Bureau of Statistics and Census of Panama in September 1952, in the form of two comprehensive tables which appeared under the title of *Resultados Generales: Primer Censo Nacional Agropecuario, 10 de Diciembre de 1950.* One of these tables gives, for the country as a whole and for each province, the number of holdings enumerated and their total production, by class of product. The other gives, for the country as a whole, and for each province and district: (a) The land area according to use; (b) the area sown, according to principal crops; (c) the production of specified fruit crops; (d) the inventory of livestock and fowls. (Source: *Resultados Generales* ..., Panama, DGE, September 1952.)

Resultados del censo agropecuario

• Los resultados generales del Censo Agropecuario de 1950 de Panamá fueron dados a conocer por la Dirección de Estadística y Censos en septiembre de 1952, en la forma de dos extensos cuadros que aparecieron bajo el título de *Resultados Generales: Primer Censo Nacional Agropecuario, 10 de Diciembre de 1950.* Uno de estos cuadros proporciona, para todo el país y para cada una de las provincias, el número de explotaciones enumeradas y su producción total, por clase de producto. El otro suministra, para todo el país y para cada una de las provincias y distritos: (a) La superficie de terreno de acuerdo con el uso; (b) el área sembrada de acuerdo con los principales cultivos; (c) la producción de determinadas frutas; y (d) las existencias de ganados y aves de curral. (Fuente: *Resultados Generales* ..., Panamá, DGE, septiembre 1952.)

Population and housing census results

• Law 21, article 3, passed in 1950, provided that the general results of

Resultados del censo de población y vivienda

• La ley 21, artículo 3, aprobada en 1950, dispuso que los resultados

the V National Census of Population and Housing of Panama should be made available within a period of two years after the date of enumeration.

Results of this Census have been made available by the Bureau of Statistics and Census of Panama, in a series of three issues of the *Boletín Informativo: Quinto Censo Nacional de Población y Vivienda, 10 de Diciembre de 1950,* issued in February 1951. Bulletin No. 1, issued in February 1951, gives preliminary population counts, for the country as a whole and for political subdivisions, by sex; and counts of dwellings. Bulletin No. 2, issued in January 1952, gives definitive population totals for the nation and for its political subdivisions, by sex. Bulletin No. 3, isued in August 1952, contains definitive total counts of the population acording to "civil" or Indians living in tribes, and according to whether urban or rural; comparisons with previous censuses; and a complete list of populated places of the Republic with number of inhabitants, by sex.

Data on characteristics of the population and on housing will appear in later special releases. (Source: *Boletín Informativo ...,* February 1951—August 1952, DGE, Panama.)

generales del V Censo Nacional de Población y Vivienda de Panamá se dieran a conocer en el término de dos años a partir de la fecha de enumeración.

Los resultados de este Censo han sido dados a conocer por la Dirección de Estadística y Censos de Panamá, en una serie de tres ediciones del *Boletín Informativo: Quinto Censo Nacional de Población y Vivienda, 10 de Diciembre de 1950.* El Boletín No. 1, publicado en febrero de 1951, da cifras preliminares de población, para todo el país y para las divisiones políticas, por sexo; y cifras de viviendas. El Boletín No. 2, publicado en enero de 1952, proporciona totales definitivos de población para el país y sus divisiones políticas, por sexo. El Boletín No. 3, emitido en agosto de 1952, contiene totales definitivos de la población, clasificada en civil, indígena, urbana y rural, cifras comparativas con otros censos y la lista completa de los lugares poblados de la República, por sexo.

Los datos sobre características de la población y la vivienda aparecerán más tarde en entregas especiales. (Fuente: *Boletín Informativo ...,* febrero 1951 a agosto 1952, DGE, Panamá.)

Personal notes — Noticias personales

• In attendance at the II Session of the Committee on Improvement of National Statistics (COINS), held in Ottawa, Canada, Sepember-October 1952, were *Srta. Carmen Miró, directora, Dirección de Estadística y Censo,* and *Sr. Manuel Balbino Moreno D., asistente del director del Censo Agropecuario.* Srta. Miró also participated in the International Seminar on Statistical Organization held in Ottawa immediately following the COINS Session.

PARAGUAY

Personal notes — Noticias personales

• Attending the II Sesion of the Committee on Improvement of National Statistics (COINS), held in Ottawa, Canada, September-October 1952, were *Dr. Carlos A. Soler, director general, Dirección General de Estadística y Censos,* and *Srta. Clorinda Mesquita Chavarri, economista, Servicio Técnico Interamericano de Cooperación Agrícola,* Asunción. Dr. Soler also attended the International Seminar on Statistical Organization held in Ottawa immediately following the COINS Session. Srta. Mesquita returned to Washington, D. C. to complete a 1-year period of training under a grant from the United States Office of Foreign Agriculture Relations which terminated in December 1952.

PERU

General census in 1955

• The Government of Peru has announced a general census of the Republic for 1955. The text of the statement announcing the forthcoming census is in part as follows: "In completion of its current economic and financial program, the Government considers it opportune to announce the next general census of the Republic, to be taken in 1955. As the census will be comprehensive, including demographic, social, and economic aspects, the Government will immediately direct that necessary preparatory measures be adopted for carrying out experimental plans and other preliminary work ..." (Source: Leopoldo Miró Quesada, DGE, Lima, October 1952.)

Censo general en 1955

• El Gobierno del Perú ha dado a conocer una declaración anunciando la realización del censo general de la República en el año 1955. El texto pertinente al futuro relevamiento censal dice: "Completando el programa de acción económica y financiera, el Gobierno considera que ha llegado el momento de anunciar la realización del próximo censo general de la República, para el año 1955. Como la obra del censo será integral, en sus aspectos demográficos, sociales y económicos, el Gobierno dispondrá de inmediato, se adopten las medidas preparatorias indispensables para la realización de los planes experimentales y otros preliminares ..." (Fuente: Leopoldo Miró Quesada, DGE, Lima, octubre 1952.)

UNITED STATES

Study of response rates to Federal surveys

• The Office of Statistical Standards, United States Bureau of the Budget, has initiated a study of the response rates attained in surveys conducted by or for Federal agencies. Plans for the study have been developed in consultation with several of the major statistics-collecting agencies, including the Bureau of Agricultural Economics (BAE), the Bureau of the Census, the Bureau of Labor Statistics (BLS), and the Federal Trade Commission (FTC).

Information on response rates for a limited number of selected surveys has already been collected by several agencies, partly as a preliminary to this study and partly for use by the Advisory Committee on Statistical Policy of the American Statistical Association. During July 1952 requests were sent to BAE, Census, BLS and FTC for information on additional surveys, with a proposal for sharing research results, progress reports, and project plans in the broad field of response. Inquiries have been confined to selected surveys representing different populations of respondents, collection methods, length, subject-matter, and agencies. The information obtained may be useful in

Estudio de las tasas de respuestas a las investigaciones federales

• La Oficina de Estándares Estadísticos, de la Dirección del Presupuesto de los Estados Unidos, ha iniciado un estudio de las tasas de respuestas alcanzadas en las investigaciones conducidas por o para los organismos federales. Los planes para el estudio han sido desarrollados en consulta con varios de los organismos recolectores principales de las estadísticas, incluyendo la Dirección de Economía Agrícola (BAE), la Dirección del Censo, la Dirección de Estadísticas de Trabajo (BLS) y la Comisión Federal de Comercio (FTC).

Diversos organismos han recogido ya información sobre las tasas de respuestas para un número ilimitado de investigaciones especiales, en parte como trabajo preliminar para este estudio y en parte para uso de la Comisión Asesora sobre Política Estadística de la Asociación Americana de Estadística. Durante el mes de julio de 1952, se enviaron a la BAE, el Censo, la BLS y la FTC, pedidos de información sobre las investigaciones adicionales, con una propuesta de compartir los resultados de las investigaciones, los informes sobre el adelanto de las mismas, y los planes de los proyectos en el campo general de las respuestas. Las encuestas han sido limitadas a investigaciones especiales que representan diferentes poblaciones de informantes, métodos de recolección, extensión, temas, y organismos. La información obtenida puede ser útil

developing theories of response behavior which may ultimately be subjected to empirical test.

The study initiated at this time is regarded as the first stage in a continuing program of response research. Ultimately, it is hoped to improve techniques for obtaining response, to attain a better understanding of response phenomena, to learn how quality of responses is affected by techniques which improve the extent of response, and to develop the implications for economical survey design of these evolving ideas about response. (Source: Boyd Ladd, Bureau of the Budget, Washington, D.C.)

Annual survey of manufactures

• The final results of the United States annual survey of manufactures are presented in the Bureau of the Census publication, *Annual Survey of Manufactures: 1949 and 1950,* for the years indicated in the title. This survey is an integral part of a program of industrial statistics which reached its present development following legislation that shifted the Census of Manufactures from a biennial to a quinquennial basis. The annual survey, based on a representative sample of manufacturing establishments, carries forward yearly the general statistics of manufacturing activity (value added by manufacture, value of shipments, cost of materials, fuels and electric energy consumed, employment, man-hours, pay rolls, inventories, and

para desarrollar teorías del comportamiento de informantes que pueden en última instancia estar sujetas a una prueba empírica.

El estudio iniciado en este momento se refiere a la etapa inicial en el programa continuo de investigación de las respuestas. Como resultado final, se espera mejorar las técnicas para obtener respuestas, alcanzar un mejor entedimiento del mecanismo de las mismas, conocer en qué grado la calidad se ve afectada por las técnicas que aumentan su alcance, y desarrollar las implicaciones para el diseño económico de investigaciones que encierren estas ideas acerca de las respuestas. (Fuente: Boyd Ladd, Dirección del Presupuesto, Washington, D.C.)

Investigación anual de manufacturas

• Los resultados finales de la investigación anual de manufacturas de los Estados Unidos son presentados en la publicación de la Dirección del Censo titulada *Annual Survey of Manufactures: 1949 and 1950,* para los años citados en el título. Esta investigación es parte de un programa de estadísticas industriales que alcanzó su desarrollo actual como resultado de la legislación que modificó la frecuencia del Censo de Manufacturas de bienal a quinquenal. La investigación anual, basada en una muestra representativa de establecimientos industriales, lleva anualmente las estadísticas generales de la actividad manufacturera (valor agregado por la manufactura, valor de embarques, costo de materiales, combustibles y energía eléctrica consumidos, empleo, horas-hombre, nóminas de pago, inventarios, y gastos de capital), que son cubiertas en detalle por el censo

capital expenditures), which are covered in detail by the quinquennial census. In addition, it fills in important gaps in the Bureau's existing monthly, quarterly, and annual reports on selected manufactured products. The annual survey is designed to yield estimates of most these general statistics for industry groups, important individual industries, geographic divisions and States, and for important cross-tabulations of major industry groups by division and by State. It also provides broad industrial and geographic totals for inventories, fuels, and expenditures for plant and equipment, and United States totals for selected product classes and metals consumed.

Over a 10-year period, it is believed that the cost of the Census annual survey program will be considerably less than that of a biennial census program since much of the detail collected in a complete census is eliminated from the annual survey which covers less than 20 per cent of the manufacturing plants. Also, through improvements in the quality of reported data which may be expected as a result of continuing contact with the larger manufacturing companies and many of the smaller ones, it appears likely that part of the cost of the annual surveys will be recovered indirectly by enabling some reduction to be made in the outlays for the quinquennial censuses. (Source: *Annual Survey* ..., Bureau of the Census, Washington, D.C., 1952.)

quinquenal. Además, completa importantes lagunas en los informes mensuales, trimestrales y anuales existentes en la Dirección sobre productos manufacturados selectos. La investigación anual está diseñada para rendir estimaciones de muchas de estas estadísticas generales para los grupos industriales, industrias individuales importantes, divisiones geográficas y Estados, y para importantes tabulaciones combinadas de los principales grupos industriales por división y por Estados. Igualmente provee totales generales industriales y geográficos para inventarios, combustibles, y gastos para plantas y equipos, y totales para los Estados Unidos para clases de productos selectos y metales consumidos.

A lo largo de un período de 10 años, se considera que el costo del programa de investigación censal anual resultará considerablemente menor que el del programa censal bienal, dado que el mayor número de detalles recogidos en un censo completo se elimina en la investigación anual que cubre menos del 20 por ciento de las plantas industriales. Además, por medio de las mejoras en la calidad de los datos informados que puede esperarse como resultado del contacto continuo con las compañías industriales más grandes y muchas de las pequeñas, puede esperarse que parte del costo de las investigaciones anuales será reembolsado indirectamente permitiendo hacer alguna reducción en el cálculo sobre gastos de los censos quinquenales. (Fuente: Annual Survey ..., Dirección del Censo, Washington, D.C., 1952.)

Statistical services of the U. S. Government

• A revised and enlarged edition of *Statistical Services of the United States Government* has been issued by the Office of Statistical Standards, United States Bureau of the Budget (June 1952.) This document provides a general description of the economic and social statistical programs of the United States Government—where they are located, how the data are collected, and what data are available in these areas from Federal agencies.

Part I describes the organization of statistical services within the Federal Government, and the organization and operating methods of the Office of Statistical Standards. It also contains brief descriptions of general principles and practices followed in Federal statistical activities, including such topics as technical aids, use of sampling, relations of Federal and State statistics, and Government use of private statistics. *Part II* describes the principal economic and social statistical series. Among the series described are those dealing with demography and health, social insurance and related programs, employment and labor, education, public assistance, criminal and judicial statistics, production distribution and service trades, prices, finance, construction, housing, foreign trade and shipping, balance of international payments, consumer income and expenditures, and national income and product. Additional detail is presented in the appendixes, which present a summary of statistical responsibil-

Servicios estadísticos del Gobierno de los Estados Unidos

• La Oficina de Estándares Estadísticos, de la Dirección del Presupuesto de los Estados Unidos, ha publicado en el mes de junio de 1952, una edición corregida y aumentada de *Statistical Services of the United States Government.* Este documento presenta una descripción general de los programas estadísticos social y económico del Gobierno de los Estados Unidos—dónde están localizados, cómo se recogen los datos, y cuáles datos están disponibles en dichas áreas de los organismos federales.

La *Parte I* describe la organización de los servicios estadísticos dentro del Gobierno Federal, y la organización y métodos de operación de la Oficina de Estándares Estadísticos. Contiene también una descripción breve de las prácticas y principios generales de la actividad estadística federal, incluyendo tópicos tales como materiales técnicos, uso del muestreo, relaciones de las estadísticas federales y estatales y uso gubernamental de las estadísticas privadas. La *Parte II* describe las principales series estadísticas económicas y sociales. Entre las series estadísticas descritas se encuentran las referentes a demografía y salubridad, seguro social y programas afines, empleo y trabajo, educación, asistencia pública, estadísticas judiciales y criminales, producción, comercio de distribución y servicios, precios, finanzas, construcción, vivienda, comercio exterior y embarques, balanza de pagos internacionales, ingresos y gastos del consumidor, e ingreso y producto nacionales. En los apéndices se incluyen detalles adicionales, junto con un resumen de

ities of Federal agencies and an annotated bibliography of the principal periodical statistical publications issued by Government agencies.

The earlier edition of *Statistical Services of the United States Government* was prepared for use in the International Statistical Conferences, held in Washington in 1947.

The new edition may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 45 cents (U. S.) a copy. Copies for official use by Government employees and official statistical offices of foreign countries are available, without charge, from the Publications Unit, Bureau of the Budget, Washington 25, D. C. (Source: Office of Statistical Standards, Bureau of the Budget, Washington, D. C.)

las responsabilidades estadísticas de los organismos federales y una bibliografía comentada de las principales publicaciones estadísticas periódicas emitidas por los organismos gubernamentales.

La edición anterior de *Statistical Services of the United States Government* fué preparada para uso en las Conferencias Estadísticas Internacionales, realizadas en Washington en 1947.

La nueva edición puede adquirirse en Superintendent of Documents, Government Printing Office, Washington 25, D. C. al precio de 45 centavos (U. S.) cada copia. Para uso oficial de los empleados y funcionarios de las oficinas de estadística gubernamentales existen copias disponibles, sin cargo, en la Publications Unit, Bureau of the Budget, Washington 25, D. C. (Fuente: Oficina de Estándares Estadísticos, Dirección del Presupuesto, Washington, D.C.)

Manpower occupations card file

• Under the sponsorship of the Task Force on Resources and Requirements of the Office of Defense Mobilization Committee on Specialized Personnel, the United States Bureau of the Census is establishing a duplicate file of approximately 6,000,000 punch cards from the 1950 Census of Population. These cards, which are designated as the Manpower Occupations Card File, will cover workers in all ocupations in the two major groups, "Professional, technical, and kindred workers" and "Craftsmen, foremen, and kindred workers," as well as in a

Archivos de tarjetas de ocupaciones del potencial humano

• La Dirección del Censo de los Estados Unidos, bajo el auspicio del Grupo de Trabajo sobre Recursos y Requerimientos de la Comisión sobre Personal Especializado de la Oficina de Movilización para la Defensa, se encuentra actualmente preparando un archivo duplicado de aproximadamente 6.000.000 de tarjetas perforadas del Censo de Población de 1950. Este archivo, llamado Archivo de Tarjetas de Ocupaciones del Potencial Humano, incluirá a los trabajadores en todas las ocupaciones dentro de los dos grupos principales, "Profesionales, técnicos, y trabajadores conexos" y "Artesanos, capataces, y trabajadores co-

number of other selected occupations. With a few minor exceptions, the duplicate file will consist of all cards for occupations with fewer than 100,00 workers, and 20 percent of the cards for occupations with more than 100,00 workers. Among the subjects included on the punch cards are sex, age, marital status, citizenship, educational attainment, industry, class of worker and income.

One of the major purpose of this file is to make more readily available for use in studies of the characteristics of workers in particular occupations, information which is not included in the regular tabulation and publication programs for the 1950 Census of Population. Since the cards will be filed by occupation, there will be eliminated the relatively great cost and time factors involved in selecting the cards for a particular occupation from the regular Population Census file of 150,000,000 cards, which is not kept in occupation order. In addition, the file will provide a much larger sample than the 3-1/3 percent sample to be used in many of the 1950 census tabulations of occupational data. This latter feature will be of particular significance in connection with relatively small but highly important occupational fields, such as the several branches of natural science and engineering.

When the file is completed by the end of the year, it will be available for use in providing tabulations of data as requested by any interested Government agency or any nongovernmental organization having an

nexos," así como en un cierto número de otras ocupaciones seleccionadas. Con muy pocas excepciones, el archivo duplicado comprenderá todas las tarjetas para ocupaciones con menos de 100.000 trabajadores, y el 20 por ciento de las tarjetas para ocupaciones con más de 100.000 trabajadores. Entre las características incluidas en las tarjetas perforadas se encuentran sexo, edad, estado civil, ciudadanía, nivel educacional, industria, clase de trabajador e ingreso.

Uno de los fines principales de este archivo es el de disponer más rápidamente de la información que no ha sido incluida en los programas regulares de tabulación y de publicaciones del Censo de Poblavión de 1950, para usarla en los estudios de las características de los trabajadores en ciertas ocupaciones. Dado que las tarjetas serán archivadas por ocupaciones, será posible eliminar los factores relativamente grandes de costo y tiempo que implica la selección de las tarjetas de una ocupación particular de entre el archivo regular del Censo de Población compuesto de 150.000.000 de tarjetas, el que no es llevado siguiendo el orden de las ocupaciones. Además, el archivo proveerá una muestra mayor que la muestra del 3-1/3 por ciento usada en muchas de las tabulaciones de los datos sobre ocupaciones del censo de 1950. Este último aspecto será de particular significación en relación con los campos ocupacionales relativamente pequeños pero de gran importancia, tales como las distintas ramas de las ciencias naturales y de la ingeniería.

Una vez completado el archivo a fines de este año, estará en condiciones de proveer tabulaciones de

appropriate need for the information. Arrangements for obtaining such tabulations should be made directly with the Bureau of the Census, and the cost of making the tabulations must be borne by the requesting agencies. A list of the occupations included in the file as well as a sample copy of the punch card may be obtained by writing to the Population and Housing Division, Bureau of the Census, Washington 25, D.C., (Source: Bernard B. Watson, Department of Labor, Washington, D.C.), July 1952.)

datos requeridas por cualquier organismo gubernamental o no gubernamental que tenga necesidad de información apropiada. Los acuerdos para obtenerla, deberán hacerse directamente con la Dirección del Censo, y el costo que impliquen las tabulaciones deberá ser sufragado por el organismo solicitante. De la División de Población y Vivienda de la Dirección del Censo, Washington 25, D. C., puede obtenerse una lista de las ocupaciones incluidas en el archivo así como una muestra de las tarjetas perforadas. (Fuente: Bernard B. Watson, Departamento del Trabajo, Washington, D. C., julio 1952.)

VENEZUELA

Population census activities

• The General Bureau of Statistics (DGE) of Venezuela has provided, in a release titled *Censo Nacional de 1950: Plan de Elaboración de los Resultados del VIII Censo General de Población* (19 p.), an outline of the tabulation plans for data of the VIII General Census of Population. This plan shows the scope and extent of breakdown for which data will be available in tables, either published or unpublished.

The following considerations entered the preparation of the tabulation plans: Comparability with previous censuses for continuity of series; recommendations of the Committee on the 1950 Census of

Actividades relacionadas con el censo de población

• La Dirección General de Estadística (DGE) de Venezuela ha proporcionado, en una publicación titulada *Censo Nacional de 1950: Plan de Elaboración de los Resultados del VIII Censo General de Población* (19 p.), un esquema de los planes de tabulación de los datos del VIII Censo General de Población. Este plan muestra el alcance y grado de subdivisión para los cuales se dispondrá de datos en cuadros, que ya han sido publicados o están sin publicar.

Para la preparación de los planes de tabulación se tuvieron en cuenta las siguientes consideraciones: Comparabilidad con los censos anteriores para mantener la continuidad en la serie; recomendaciones de la Comisión del Censo de las Américas

the Americas and of the United Nations; the provision of adequate data on certain types of characteristics needed by specific government agencies to enable them to carry out the functions assigned them.

The basic unit of classification for tabulations is the municipio. Although the results may be published by larger divisions depending on the particular nature of the tabulated data, the Census Office will always be able to furnish complete information for municipios whenever needed for study of specific problems in a particular area of the country. (Source: *Censo Nacional* ..., DGE, 1952.)

de 1950 y de las Naciones Unidas; el suministro de datos adecuados sobre ciertas características, de los cuales necesitan determinados organismos gubernamentales para poder llevar adelante las funciones que les han sido asignadas.

La unidad básica de clasificación para las tabulaciones es el municipio. Aun cuando los resultados pueden ser publicados por divisiones políticas mayores, según la naturaleza particular de los datos tabulados, la Oficina Censal siempre estará en capacidad de suministrar información completa sobre los municipios, siempre que se necesite para el estudio de problemas específicos en una zona determinada lel país. (Fuente: *Censo Nacional* ..., DGE, 1952.)

Personal notes — Noticias personales

• Attending the II Session of the Committee on Improvement of National Statistics, held in Ottawa, Canada, Sepember-October 1952, were *Sres. Manuel Felipe Recao, director general, Dirección General de Estadística y de Censos* (DGE); *Vicente González, jefe de coordinación, Oficina Central del Censo,* of the DGE; *Federico Izaguirre Landaez, jefe de Sección, Departamento Censo Agropecuario;* and *Constantino Quero, jefe, División Económica, Ministerio de Agricultura.* After the Session, Sr. Izaguirre returned to Washington, D. C. to finish his 1-year period of training (ending in January 1953) with the U.S. Office of Foreign Agriculture Relations, before going back to Caracas.

PUBLICATIONS — PUBLICACIONES

BIBLIOGRAPHY–BIBLIOGRAFIA

BIBLIOGRAPHY OF SELECTED REFERENCES RELATING TO METHODS IN AGRICULTURAL STATISTICS

BIBLIOGRAFIA DE REFERENCIAS ESCOGIDAS RELACIONADAS CON LOS METODOS DE ESTADISTICA AGROPECUARIA

EXPLANATORY NOTES

Order of arrangement. Entries are arranged according to the chapter organization of the material in this subject issue, i.e.: (1) Objectives and scope of a system of agricultural statistics, and uses of the data; (2) establishing a system of agricultural statistics–elements and steps (including coordination); (3) methods and techniques of particular importance in this field; (4) problems of international comparability; (5) international activities relating to agricultural statistics (recommendations and standards, training and consultation, committee and conference activities, etc.). Under each of these headings, the arrangement is alphabetical, by title of the publication.

Principles of selection. (1) The emphasis is on current agricultural statistics, although some material on the agricultural census has been included to show its value and relationship to a system of current statistics. (2) Titles of articles published in the present subject issue itself are included, the practice in this respect differing from that followed in subject issue No. 36, which excluded such titles. It was felt that inclusion of these articles would increase the usefulness of the Bibliography when used independently of the Journal. (3) Many references bearing on methodology of current agricultural statistics which were used as, or referred to in, documents of recent inter-American statistical conferences (1947-1952) are included, and in particular references which appeared in footnotes or reference lists at the end of the agricultural documents of the II Session of the Committee on the Improvement of National Statistics, held in September-October 1952. (4) For references to textbooks and teaching materials which would normally appear in this Bibliography, the user is referred to the "Bibliography of Statistical Textbooks and Other Teaching Material" prepared by the IASI Committee on Statistical Education (CSE), and published as supplement 2 of *Estadística*, No. 36, September 1952. A few additional titles not appearing in the CSE Bibliography are listed here either because they have been translated into Spanish or selected for translation, or because they were prepared in Spanish specifically for training center purposes. (5) Various international classifications of importance to agricultural statistics are included.

NOTAS EXPLICATIVAS

Orden de colocación. Las entradas se hallan ordenadas conforme a la organización por capítulos del material que comprende esta edición especial, es decir: (1) Objetivos y alcance de un sistema de estadísticas agropecuarias, y utilización de los datos; (2) establecimiento de un sistema de estadísticas agropecuarias–elementos y etapas (incluyendo coordinación); (3) métodos y técnica de importancia especial en este ramo; (4) problemas de comparabilidad internacional; (5) actividades internacionales referentes a las estadísticas agropecuarias (recomendaciones y estándares, entrenamiento y consulta, actividades de comisiones y conferencias, etc.). Bajo cada uno de estos encabezamientos, el ordenamiento se ha hecho alfabéticamente por los títulos de las publicaciones.

Criterios de selección. (1) El énfasis se ha puesto en las estadísticas agropecuarias continuas, aun cuando se ha incluido algún material sobre los censos agropecuarios a fin de mostrar sus relaciones y valor para las estadísticas continuas. (2) Se han incluido los títulos de los artículos publicados en la presente edición, con lo cual se ha seguido una práctica diferente a la empleada en la edición especial No. 36, que no incluyó dichos títulos. Se creyó que la inclusión de estos artículos aumentaría la utilidad de la Bibliografía cuando ésta se usara independientemente de la Revista. (3) Se han incluido muchas referencias a documentos sobre metodología de las estadísticas agropecuarias continuas, que fueron usados o citados en recientes conferencias interamericanas de estadística (1947-1952), y en particular las referencias colocadas en notas al pie y en listas bibliográficas al final de los documentos agropecuarios para la II Sesión de la Comisión de Mejoramiento de las Estadísticas Nacionales, celebrada en septiembre y octubre de 1952. (4) Para las referencias relacionadas con libros de texto y materiales de enseñanza, que normalmente aparecerían en esta Bibliografía, el lector debe consultar la "Bibliografía de Tratados y Demás Material de Enseñanza Estadística," preparada por la Comisión de Educación Estadística del IASI (CEE) y publicada como suplemento No. 2 de *Estadística* No. 36, septiembre de 1952. Aquí se han anotado, además, unos pocos títulos adicionales que no aparecen en la Bibliografía de la CEE, por razón de haber sido traducidos al español o escogidos para ser traducidos, o bien porque fueron preparados en español específicamente para los fines de los centros de enseñanza. (5) Se incluyen varias clasificaciones internacionales de importancia para las estadísticas agropecuarias.

"COINS" abbreviation. To conserve space in the present bibliography, the abbreviation "COINS" has been used to signify "Committee on Improvement of National Statistics."

Abreviación "COINS." Para conservar espacio en la presente bibliografía, se ha usado la abreviación "COINS" como equivalente de "Comisión de Mejoramiento de las Estadísticas Nacionales."

OBJECTIVES AND SCOPE OF A SYSTEM OF AGRICULTURAL STATISTICS, AND USES OF THE DATA

OBJETIVOS Y ALCANCE DE UN SISTEMA DE ESTADISTICAS AGROPECUARIAS, Y UTILIZACION DE LOS DATOS

"A Critical Evaluation of Available Agricultural Statistics." By Ivan M. Lee. *Journal of the American Statistical Association,* vol. 47, no. 258, June 1952, p. 267-280. *(USA-3040)*

Estudos de Estatística — Teórica e Aplicada: Estatística Agrícola. 1950—. Irregular. Rio de Janeiro. Instituto Brasileiro de Geografia e Estatística. Conselho Nacional de Estatística. (Bras-*6200*)

"Food Balance Sheets." *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1230a, June 16, 1952, 3 p. (Int-IASI-*3020*)

Prepared by the Food and Agriculture Organization of the United Nations.

Published also in Spanish. Appears in *Estadística,* March 1953, in both languages.

Food Composition Tables for International Use. A report prepared by Charlotte Chatfield. Washington, D.C., 1949. Food and Agriculture Organization of the United Nations. 56 p. FAO nutritional studies, no. 3. (Int-FAO-*9800*)

Published also in Spanish.

Handbook for the Preparation of Food Balance Sheets. Washington, D.C., 1949. Food and Agriculture Organization of the United Nations. 35 p. (Int-FAO-*6200*)

Published also in Spanish and French.

Contents: Explanations and details of the sheet; procedure for recording and checking; commodity classification for food balance sheets; sample form for food balance sheets.

"Hojas de Balance de Alimentos." *II Sesión de COINS, Ottawa, Canadá, septiembre 29 —octubre 10, 1952,* IASI doc. 1230b, junio 16, 1952, 4 p. (Int-IASI-*3020*)

Preparado por la Organización de las Naciones Unidas para la Agricultura y la Alimentación.

Publicado también en inglés. Aparece en *Estadística,* marzo 1953, en ambos idiomas.

"Indices Generales de la Producción Agrícola." Colaboración de Ramón Fernández y Fernández. *Boletín Mensual de la Dirección de Economía Rural,* no. 226, marzo 1945, p. 120-129. (Méx-*6200*)

Contenido: Antecedentes; índices que se elaboran actualmente; el procedimiento de ponderación; conclusión; el movimiento de índices de 1939 a 1944.

Manual para la Preparación de Hojas de Balance de Alimentos. Washington, D.C., 1949. Organización de las Naciones Unidas para la Agricultura y la Alimentación. 41 p. (Int-FAO-*6200*)

Publicado también en inglés y en francés.

Contenido: Explicación detallada de la hoja de balance; métodos para calcular y verificar los datos; clasificación de los productos; muestra de una hoja de balance de alimentos.

Meeting on Index Numbers of Food and Agriculture Production. Rome, 1952. Food and Agriculture Organization of the United Nations. 119 p. (Int-FAO-*3120*)

Contains six working papers: I, introduction; II, analysis of international index numbers of agricultural production; III, national index numbers of agricultural production; IV, comments of progress report "FAO Index Numbers of Food and Agricultural Production"; V, developments in the FAO index number project; and VI, use of food balance sheets and other basic data in compiling index numbers of food and agricultural production.

"Objectives and Scope of an Agricultural Statistics System." *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1204a, July 31, 1952, 11 p. (Int-IASI-*3020*)

Prepared by the Office of Foreign Agricultural Relations of the U.S. Department of Agriculture in collaboration with IASI.

Published also in Spanish. Appears in *Estadística,* March 1953, in both languages.

"Objetivos y Alcance de un Sistema de Estadísticas Agropecuarias." *II Sesión de COINS, Ottawa, Canadá, Septiembre 29 — Octubre 10, 1952,* IASI doc. 1204b, julio 31, 1952, 12 p. (Int-IASI-*3020*)

Preparado por la Oficina de Relaciones Agrícolas Exteriores del Departamento de Agricultura de los Estados Unidos en colaboración con IASI.

Publicado también en inglés. Aparece en *Estadística,* marzo 1953, en ambos idiomas.

Potentialities of Census Data for Marketing Rsearch.. By Philip M. Hauser. 1951. 7 p. Typewritten. (NonG-*2110*)

Adapted from a talk given before the Market Research Council in November 1949.

Published also in Spanish in *Estadística,* March 1952.

"Price Indexes of Agricultural Products and Farm Costs." *Canadian Statistical Review,* vol. XXIII, no. 8, August 1948, p. i-iii. (Can-*6000*)

Description of the methods used in constructing the following indexes: Wholesale price index numbers of Canadian farm products; index numbers of farm prices of agricultural products; index of farm family living costs; price index of commodities and services used by farmers.

Program for the 1950 World Census of Agriculture. Washington, D.C., 1948. Food and Agriculture Organization of the United Nations. 96 p. (Int-FAO-*2110*)

Published also in Spanish and in French.

Contents: Proposed census items (short list and expanded list); explanatory notes and definitions; proposed tables; alphabetic list of crops with botanical names.

"Un Programa de Estadística de Agricultura." Por H. H. Schutz. *Estadística,* vol. II, no. 12, diciembre 1945, p. 512-528. (Int-IASI-*3040*)

Condensación de un estudio original titulado "Programa Estadístico para el Ministerio de Agricultura del Perú."

"The Social Value of Agricultural Statistics." By Walter H. Ebling. *Estadística,* vol. VII, no. 25, December 1949, p. 530-537. (Int-IASI-*3040*)

Tablas de Composición de Alimentos para Uso Internacional. Estudio preparado por Charlotte Chatfield. Washington, D.C., 1949. Organización de las Naciones Unidas para la Agricultura y la Alimentación. 65 p. FAO estudios de nutrición, no. 3. (Int-FAO-*9800*)

Publicado también en inglés.

"Using the Census of Agriculture." By Conrad Taeuber. *IV Session of the Committee on the 1950 Census of the Americas, Washington, D.C., June 11-15, 1951,* IASI doc. 1003a, May 10, 1951, 7 p. (Int-IASI-*3020*)

Published also in Spanish. Appears in *Estadística,* March 1953, in both languages.

"Utilización de los Datos Censales en el Análisis de Mercados." Por Philip M. Hauser. *Estadística,* vol. X, no. 34, marzo 1952, p. 3-8. (Int-IASI-*3040*)

Traducción del inglés.

"Utilización del Censo Agropecuario." Por Conrad Taeuber. *IV Sesión de la Comisión del Censo de las Américas de 1950, Washington, D.C., Junio 11-15, 1951,* IASI doc. 1003b, mayo 10, 1951, 9 p. (Int-IASI-*3020*)

Publicado también en inglés. Aparece en *Estadística,* marzo 1953, en ambos idiomas.

"Utilización del Método de Encuestas en la Recopilación de Estadísticas Agrícolas." Por Luis A. Nazario y Roe Goodman. *Turrialba,* vol. 2, no. 2, abril-junio 1952, p. 51-57. (Int-IAIAS-*6200*)

Describe los problemas y el progreso del trabajo de establecer un servicio de estimativas agrícolas en Puerto Rico.

ESTABLISHING A SYSTEM OF AGRICULTURAL STATISTICS—ELEMENTS AND STEPS

ESTABLECIMIENTO DE UN SISTEMA DE ESTADISTICAS AGROPECUARIAS—ELEMENTOS Y ETAPAS

Agricultural Statistics [*Canada*]. British Commonwealth Statisticians' Conference, 1951. Ottawa, 1951. Department of Trade and Commerce. Dominion Bureau of Statistics. 17 p. (approx.). (Can-*6200*)

Contents: Part A, organization of statistics work in Canada; part B, public relations aspects of collection and publication of agricultural statistics; part C, problems which arise in meeting FAO recommendations for agricultural statistics; and, part D, sampling for agricultural statistics in Canada.

Translated into Spanish by IASI as doc. 1232 Can. of II Session of COINS.

"Agricultural Statistics within the Framework of National Statistics." By Omar Dengo and Frank Parker. *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1209a, September 25, 1952, 7 p. (Int-IASI-*3020*)

Published also in Spanish. Appears in *Estadística,* March 1953, in both languages.

"Algunos Problemas Específicos sobre la Compilación de Datos Estadístico-Agropecuarios." Por Walter A. Hendricks. *II Sesión de COINS, Ottawa, Canadá, Septiembre 29 — Octubre 10, 1952,* IASI doc. 1207 b, junio 16, 1952, 8 p. (Int-IASI-*3020*)

Publicado también en inglés. Aparece en *Estadística,* marzo 1953, en ambos idiomas.

"Anotaciones sobre el Estado de las Estadísticas Agropecuarias en los Países Americanos." (Preliminar.) *II Sesión de COINS, Ottawa, Canada, Septiembre 29 — Octubre 10, 1952,* IASI doc. 1231 Sp., septiembre 20, 1952, 51 p. (Int-IASI-*3020*)

"Are Yearly Variations in Crop Yield Really Random?" By Richard J. Foote and Louis H. Bean. *Agricultural Economics Research,* vol. III, no. 1, January 1951, p. 23-30. (USA-*6200*)

"Basic Considerations for the Establishment or Improvement of a Current Agricultural Statistics Service." *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1205a, July 31, 1952, 14 p. (Int-IASI-*3020*)

Published also in Spanish. Appears in *Estadística,* March 1953, in both languages.

"Breves Exposiciones sobre Problemas Importantes en los Programas de Estadísticas Agropecuarias en los Países." *II Sesión de COINS, Ottawa, Canadá, Septiembre 29 — Octubre 10, 1952,* IASI doc. 1232b. (Int-IASI-*3020*)

Consiste de una serie de documentos sobre algunos países, a continuación: Argentina, Bolivia, Canadá, Costa Rica, Panamá, Paraguay, República Dominicana, y Uruguay.

"El Censo Mundial de Agricultura de 1950." Por Conrad Taeuber. *Estadística,* vol. VI, no. 21, diciembre 1948, p. 530-541. (Int-IASI-*3040*)

Traducción del trabajo presentado en inglés a la reunión conjunta de ISI y IASI, septiembre 17, 1947, en Washington, D.C.

"Consideraciones Básicas para el Establecimiento o Mejoramiento de un Servicio de Estadísticas Agropecuarias Continuas." *II Sesión de COINS, Ottawa, Canadá, Septiembre 29 — Octubre 10, 1952,* IASI doc. 1205b, julio 31, 1952, 14 p. (Int-IASI-*3020*)

Publicado también en inglés. Aparece en *Estadística,* marzo 1953, en ambos idiomas.

The Crop and Livestock Reporting Service of the United States. Washington, D.C., U.S.Govt.Print.Off., 1933. Department of Agriculture. Bureau of Agricultural Economics. 104 p. (USA-*6220*)

"Crop Estimating and Forecasting in Under-Developed Areas." UN, E/CN.3/Sub.1/29, September 6, 1950. 6 p. (Int-UN-*1000*)

"Developments in Crop and Livestock Reporting Since 1920." By Joseph A. Becker and Charles L. Harlan. *Journal of Farm Economics,* vol. XXI, no. 4, November 1939, p. 799-827 (USA-*6200*)

"Estadísticas Agrícolas en Puerto Rico." Por Luis A. Nazario, Roe Goodman, Clarence O. Parker, y Bartolomé Morell. *II Sesión de COINS, Ottawa, Canadá, Septiembre 29 — Octubre 10, 1952,* IASI doc. 1221 Sp., julio 1, 1952, 21 p. (Int-IASI-*3020*)

"Exposición sobre Investigaciones Enumerativas Generales." *Estadística,* vol. VIII, no. 29, diciembre 1950, p. 495-514 (parte I); vol. X, no. 34, marzo 1952, p. 29-46, y no. 35, junio 1952, p. 224-253 (parte II). (Int-IASI-*3040*)

Traducción del artículo "A Report on the General Enumerative Surveys" publicado en *Agricultural Economics Research,* abril y octubre 1949, escrito por Emerson M. Brooks (parte I) y Catherine Senf (parte II).

Usado como IASI doc. 1227b para la II Sesión de COINS.

Fluctuations in Crops and Weather, 1866-1948. Washington, D.C., U.S. Govt. Print. Off., 1951. Department of Agriculture. 183 p. Statistical bulletin, no. 101. (USA-*6220*)

La Investigación Estadística en Guatemala. Tesis presentada a la Junta Directiva de la Facultad de Ciencias Económicas de la Universidad de San Carlos por Raúl Sierra Franco al conferírsele el título de licenciado en economía. Guatemala, 1952. Universidad de San Carlos de Guatemala. Facultad de Ciencias Económicas. 179 p. (Guat-*1400*)

Incluye capítulo sobre estadística agropecuaria.

Journal of Farm Economics. 1919-. Quarterly. Menasha, Wisconsin. American Farm Economic Association. (USA-*6200*)

Includes articles on methods and development of agricultural statistics, statistical sampling in agriculture, etc.

"The 1950 World Census of Agriculture." By Félix Rosenfeld and Alberto Arbeláez-Manrique. *Monthly Bulletin of Agricultural Economics and Statistics,* vol. I, no. 4, August 1952, p. 8-10. (Int-FAO-*6200*)

"On Errors in Surveys." By W. Edwards Deming. *American Sociological Review,* vol. IX, no. 4, August 1944, p. 359-369. Reprint. (USA-*9000*)

Published also in Spanish in *Estadística,* December 1948 and March 1949.

"Organization and Operations of a Current Agricultural Statistical Service." By Charles F. Sarle. *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1208 Eng., June 16, 1952, 6 p. (Int-IASI-*3020*)

"Planeamiento y Ejecución de Investigaciones por Muestreo." Por Emerson H. Brooks. *II Sesión de COINS, Ottawa, Canadá, Septiembre 29 — Octubre 10, 1952,* IASI doc. 1212b, julio 5, 1952, 7 p. (Int-IASI-*3020*)

Publicado también en inglés. Aparece en *Estadística,* marzo 1953, en ambos idiomas.

"Planning and Operating Sample Surveys." By Emerson M. Brooks. *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1212a, July 15, 1952, 10 p. (Int-IASI-*3020*)

Published also in Spanish. Appears in *Estadística,* March 1953, in both languages.

"Progress of Agricultural Statistics in the World." By E.S. Woytinsky and W.S. Woytinsky. *Journal of Farm Economics,* vol. XXI, no. 4, November 1939, p. 761-787. (USA-*6200*)

"A Report on the General Enumerative Surveys." *Agricultural Economics Research,* vol. I, no. 2, April 1949, p. 37-48 (part I); no. 4, October 1949, p. 105-133 (part II). (USA-*6200*)

Part I prepared by Emerson N. Brooks; part II by Catherine Senf.

Published also in Spanish in *Estadística,* December 1950, and March and June 1952.

Used as IASI doc. 1227a of II Session of COINS.

"The Revised Price Indexes." The 1950 revision of the BAE indexes of prices received by farmers, and of prices paid by farmers, including interest, taxes, and farm wage rates. By B. Ralph Stauber, Nathan M. Koffsky, and C. Kyle Randall. *Agricultural Economics Research,* vol. II, no. 2, April 1950, p. 33-62. (USA-*6200*)

"El Servicio de Estadísticas Agropecuarias dentro de la Organización Nacional de Estadística." Por Omar Dengo y Frank Parker. *II Sesión de COINS, Ottawa, Canadá, Septiembre 29 — Octubre 10, 1952,* IASI doc. 1209b, septiembre 25, 1952, 8 p. (Int-IASI-*3020*)

Publicado también en inglés. Aparece en *Estadística,* marzo 1953, en ambos idiomas.

"Sobre Errores en las Investigaciones." Por W. Edwards Deming. *Estadística,* vol. VI, no. 21, diciembre 1948, p. 493-504; vol. VII, no. 22, marzo 1949, p. 84-91. (Int-IASI-*3040*)

Publicado también en inglés en *American Sociological Review,* agosto 1944.

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"Special Vegetable Surveys in the New York City Market Area." By Irving Holmes. *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1219 Eng., July 15, 1952, 6 p. (Int-IASI-*3020*)

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Publicado también en *Estadística,* marzo 1953.

"Why the Government Entered the Field of Crop Reporting and Forecasting." By Walter H. Ebling. *Journal of Farm Economics,* vol. XXI, no. 4, November 1939, p. 718-734. (USA-*6200*)

METHODS AND TECHNIQUES OF PARTICULAR IMPORTANCE IN THE FIELD OF AGRICULTURAL STATISTICS

METODOS Y TECNICAS DE IMPORTANCIA ESPECIAL EN EL RAMO DE LAS ESTADISTICAS AGROPECUARIAS

"Adjustment for Non-Response Bias in a Rural Mailed Survey." By A. L. Finkner. *Agricultural Economics Research,* vol. IV, no. 3, July 1952, p. 77-82. (USA-*6200*)

Based on a survey conducted by the North Carolina Field Office of Agricultural Estimates.

Agricultural Economics Research. 1949-. Quarterly. Washington, D.C. Department of Agriculture. Bureau of Agricultural Economics. (USA-*6200*)

Contains articles on results or findings of research carried out in the Bureau, research methods and techniques being developed, critical discussions of old techniques in regular use, and new or expanding areas of research or statistical fact-gathering.

The Agricultural Estimating and Reporting Services of the United States Department of Agriculture. Prepared by the Bureau of Agricultural Economics and Production and Marketing Administration. Washington, D.C., 1949. Department of Agriculture. 266 p. Miscellaneous publication, no. 703. (USA-*6220*)

Used as IASI doc. 1223 Eng. of II Session of COINS.

"Basic Agricultural Statistical Methods." By Charles F. Sarle. *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1213 Eng., June 16, 1952, 7 p. (Int-IASI-*3020*)

"Bibliography of Statistical Textbooks and Other Teaching Material." "Bibliografía de Tratados y Demás Material de Enseñanza Estadística." *Estadística,* vol. X, no. 36, September 1952, supplement 2, p. 623-669. (Int-IASI-*3040*)

See especially chapter 7: "Statistical Method with Special Application to Biology, Agronomy, and Forestry."

"Designs of Samples for Surveys." By Earl E. Houseman. *Agricultural Economics Research*, vol. I, no. 1, January 1949, p. 3-10. (USA-*6200*)

Used as IASI doc. 1222 Eng. of II Session of COINS.

Published also in Spanish in *Estadística*, March 1953.

"Diseños de Muestras para Investigaciones." Por Earl E. Houseman. *Estadística*, vol. XI, no. 38, marzo 1953. (Int-IASI-*3040*)

Publicado también en inglés en *Agricultural Economics Research*, enero 1949, y como IASI doc. 1222 Eng. para la II Sesión de COINS.

"Forecasting the Demand for Agricultural Products." By James P. Gavin. *Agricultural Economics Research*, July 1952. (USA-*6200*)

"Fuentes de Error de las Informaciones Estadístico-Agropecuarias." Por W. Edwards Deming y Ray B. Converse. *II Sesión de COINS, Ottawa, Canadá, Septiembre 29 — Octubre 10, 1952*, IASI doc. 1214b, septiembre 10, 1952, 12 p. (Int-IASI-*3020*)

Publicado también en inglés. Aparece en *Estadística*, marzo 1953, en español.

"Identificación Rural Previa como Sustituto de la Cartografía: IV Censo Agropecuario de la República Dominicana." Por Milcíades D. Herrera B. *Estadística*, vol. X, no. 37, diciembre 1952, p. 721-726 (Int-IASI-*3040*)

"The Indian National Sample Survey." Paper prepared by P.C. Mahalanobis. UN, E/CN.3/Sub.1/L.7, September 11, 1950. 7 p. (Int-UN-*1000*)

Investigación a Base de Muestreo en la Provincia de Pichincha. Por Raymond Jessen. Quito, Ecuador, 1952. II Centro Latinoamericano de Capacitación y Demostración Estadística Agrícola. 75 p. (aprox.). (Int-*3150*)

Interpretación en clase y versión española por Rodrigo Umaña.

Edición preliminar que será completada con un informe descriptivo con los resultados obtenidos de la operación, y un informe analítico, respectivamente.

"Investigaciones Objetivas del Rendimiento del Maís en Varios Estados del Sur." Por John C. Scholl. *II Sesión de COINS, Ottawa, Canadá, Septiembre 29 — Octubre 10, 1952*, IASI doc. 1218b, agosto 15, 1952, 7 p. (Int-IASI-*3020*)

Publicado también en inglés. Aparece en *Estadística*, marzo 1953, en español.

"Maincrop Potato Growing in England and Wales." UN, E/CN.3/Sub.1/28, September 5, 1950. 13 p. (Int-UN-*1000*)

The Master Sample. Prepared for the Regional Conference of the Bureau, Chicago, September 23-27, 1946. By Robert E. Straszheim. Department of Agriculture. Bureau of Agricultural Economics. 8 p. Mimeographed. (USA-*6200*)

Used as IASI doc. 1226 Eng. of II Session of COINS.

"The Master Sample of Agriculture." *Journal of the American Statistical Association*, vol. 40, no. 229, March 1945, p. 38-56. (USA-*3040*)

I, development and use, by A. J. King; II, design, by R.J. Jessen.

Used as IASI doc. 1224 Eng. of II Session of COINS.

"The Master Sample Project and Its Use in Agricultural Economics." By R.J. Jessen. *Journal of Farm Economics*, vol. 29, no. 2, May 1947, p. 531-540. (USA-*6200*)

Used as IASI doc. 1225 Eng. of II Session of COINS.

Published also in Spanish in *Estadística*, March 1953.

"Methods Used in a Survey of Orchards (Michigan Cherries)." By H.F. Huddleston. *Agricultural Economics Research*, vol. II, no. 4, October 1950, p. 126-130. (USA-*6200*)

"El Método de Muestreo al Azar para Mejorar las Estadísticas Agrícolas." Por P.V. Sukhatme. *Boletín Mensual de Economía y Estadística Agrícolas*, vol. I, no. 1, mayo 1952, p. 2-6. (Int-FAO-*6200*)

Publicado también en inglés.

Metodología en Estadísticas Agrícolas de las Américas. Estudio preliminar basado en un grupo seleccionado de productos agrícolas en un número limitado de países. Incluye una exposición general de métodos de las muestras y de métodos de los censos agropecuarios. Por Hernán Montoya. Washington, D.C., 1945. Instituto Interamericano de Estadística. 190 p. Serie de proyectos, no. 3. IASI doc. 681b. (Int-IASI-*6200*)

Reimpresión de *Estadística,* marzo, junio y septiembre 1946. Reproducida en forma monográfica, por el Instituto Interamericano de Estadística y la Organización de las Naciones Unidas para la Agricultura y la Alimentación, en conjunto, septiembre de 1949.

Contenido: Observaciones generales sobre metodología en estadística agrícola; sistemas estadísticos agrícolas en algunos países latino-americanos; el servicio de estadística agrícola en los Estados Unidos; conclusiones.

"Métodos de Muestreo para Estimaciones Agropecuarias." Por Walter A. Hendricks. *II Sesión de COINS, Ottawa, Canadá, Septiembre 29 — Octubre 10, 1952,* IASI doc. 1211b, junio 16, 1952, 8 p. (Int-IASI-*3020*)

Publicado también en inglés.

"Métodos de Muestreo Usados en la Elaboración de Estimaciones y Pronósticos Agropecuarios, y Elementos a Ser Considerados en Su Adopción." *II Sesión de COINS, Ottawa, Canadá, Septiembre 29 — Octubre 10, 1952,* IASI doc. 1210b, julio 31, 1952, 14 p. (Int-IASI-*3020*)

Preparado por la Dirección de Economía Agrícola del Departamento de Agricultura de los Estados Unidos, en colaboración con IASI.

Publicado también en inglés. Aparece en *Estadística,* marzo 1953, en ambos idiomas.

"New Developments in Agricultural Sampling." By Arnold J. King and G. Simpson. *Journal of Farm Economics,* vol. 22. no. 1, February 1940, p. 341-349 (USA-*6200*)

"Note on the Application of Sampling Methods in Crop Estimating and Forecasting." UN, E/CN.3/Sub.1/17, August 17, 1949. 32 p. (Int-UN-*1000*)

Includes appendix A: "Measurement of Agricultural Production"; appendix B "Methods of Compiling Area and Yield Statistics of Crops in India and the Improvements Brought About in the Latter by Random Sample Surveys"; and appendix C: "Excerpt from Estimating Agricultural Production in Japan: A Summary."

"Objective Corn Yield Surveys in Several Southern States." By John C. Scholl. *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1218a, August 15, 1952, 6 p. (Int-IASI-*3020*)

Published also in Spanish. Appears in *Estadística,* March 1953, in Spanish.

"Objective Wheat and Rye Yield Estimates in the United Kingdom-United States Zone of Germany." By Paul L. Koenig and Walter A. Hendricks, *II Session of COINS, Ottawa, Canadá, September 29 — October 10, 1952,* IASI doc. 1220 Eng., June 16, 1952, 8 p. (Int-IASI-*3020*)

"El Proyecto de la Muestra Principal y Su Uso en la Economía Agrícola." Por R.J. Jessen. *Estadística,* vol. XI, no. 38, marzo 1953. (Int-IASI-*3040*)

Publicado también en inglés en *Journal of Farm Economics,* mayo 1947, y como IASI documento 1225 Eng. para la II Sesión de COINS.

"Random Sampling for Improvement of Agricultural Statistics." By P.V. Sukhatme. *Monthly Bulletin of Agricultural Economics and Statistics,* vol. I, no. 1, May 1952, p. 2-6. (Int-FAO-*6200*)

Published also in Spanish.

Research in Agricultural Index Numbers. Scope and method. By John D. Black and Bruce D. Mudgett. New York, 1938. Social Science Research Council. Advisory Committee on Social and Economic Research in Agriculture. 152 p. Social Science Research Council, bulletin no. 10. (NonG-*6200*)

This report undertakes to analyze the problems involved in constructing index numbers for agriculture, to interpret and evaluate the existing index series, to point out additional series that are needed and the problems involved in constructing them, and finally to suggest lines which index numbers research may advantageously follow.

"The Sample Design for a National Farm Survey by the BAE." By Earl E. Houseman. *Journal of Farm Economics,* vol. 29, no. 1, February 1947, p. 241-245. Unexamined. (USA-*6200*)

"Sample Surveys of Current Interest." UN, E/CN.3/Sub.1/43, November 2, 1951. 51 p. (Int-UN-*1000*)

Includes various surveys related to agriculture.

"Sampling for Agricultural Data." By Walter A. Hendricks. *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1211a, June 16, 1952, 6 p. (Int-IASI-*3020*)

Published also in Spanish.

"Sampling Methods for Agricultural Estimating and Forecasting, and Elements to Be Considered in Their Adoption." *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1210a, July 31, 1952, 12 p. (Int-IASI-*3020*)

Prepared by the Bureau of Agricultural Economics of the U.S. Department of Agriculture in collaboration with IASI.

Published also in Spanish. Appears in *Estadística,* March 1953, in both languages.

"Sampling Methods for Estimating Distribution by Size of Individual and Family Income." UN, E/CN.3/Sub.1/27, August 29, 1950. 13 p. (Int-UN-*1000*)

"Sampling Methods in Marketing Research." By Earl E. Houseman. *Agricultural Economics Research,* vol. II, no. 3, July 1950, p. 73-81. (USA-*6200*)

"Some Problems of Tabulation in Agricultural Mail Sampling." By Walter H. Ebling. *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1216 Eng., June 16, 1952, 7 p. (Int-IASI-*3020*)

Published also in *Estadística,* March 1953.

"Sources of Error in Agricultural Data." By W. Edwards Deming and Ray B. Converse. *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1214a, September 10, 1952, 11 p. (Int-IASI-*3020*)

Published also in Spanish. Appears in *Estadística,* March 1953, in Spanish.

"Statistical Teaching and Training Methods and Material." "Métodos y Materiales de Enseñanza y Entrenamiento Estadísticos." *Estadística,* vol. X, no. 36, September 1952, p. 343-669. (Int-IASI-*3040*)

A number of the articles in this issue are of interest to agricultural statistics.

"Técnicas de Muestreo Aplicadas en la Elaboración de Estimaciones Agrícolas en los Estados Unidos." Por Antonio J. Posada. *Estadística,* vol. IX, no. 31, junio 1951, p. 172-190. (Int-IASI-*3040*)

Publicado también como reimpresión. Forma parte del documento 1231 Sp. de la II Sesión de COINS.

"Use of Check Data in Crop Estimating." *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1215 Eng., September 25, 1952, 12 p. (Int-IASI-*3020*)

Prepared by the Division of Field Crops Statistics of the Bureau of Agricultural Economics, U.S. Department of Agriculture.

Published also in *Estadística,* March 1953.

"Use of Crop-Weather Relationships in Forecasting Crop Yields." By John C. Sholl. *Estadística,* vol. IX, no. 30, March 1951, p. 5-14. (Int-IASI-*3040*)

"Use of Sampling Method for Improvement of Statistics of Acreage, Yield and Forecasts." UN, E/CN.3/Sub.1/44, November 5, 1951, 24 p. (Int-UN-*1000*)

PROBLEMS OF INTERNATIONAL COMPARABILITY IN AGRICULTURAL STATISTICS

PROBLEMAS DE COMPARABILIDAD INTERNACIONAL DE LAS ESTADISTICAS AGROPECUARIAS

"Agricultural Statistics: Regional Problems." *II Inter American Statistical Congress, Bogota, Colombia, January 16-27, 1950,* IASI doc. 680a, September 26, 1949, 2 p. (Int-IASI-*3020*)

Published also in Spanish.

"Comparabilidad Internacional de las Estadísticas Agropecuarias y de Alimentos." Por Conrad Taeuber. *Estadística,* vol. XI, no. 38, marzo 1953. (Int-IASI-*3040*)

Publicado también en inglés en *The Milbank Memorial Fund Quarterly,* julio 1949.

"Estadísticas Agropecuarias: Problemas Regionales." *II Congreso Interamericano de Estadística, Bogotá, Colombia, Enero 16-27, 1950,* IASI doc. 680b, septiembre 26, 1949, 2 p. (Int-IASI-*3020*)

Publicado también en inglés.

"Internationally Comparable Statistics of Food and Agriculture." By Conrad Taeuber. *The Milbank Memorial Fund Quarterly*, vol. XXVII, no. 3, July 1949, p. 299-313. (USA-*5000*)

Published also in Spanish in *Estadística,* March 1953.

"Problemas de Comparabilidad Internacional de las Estadísticas Agropecuarias." *II Sesión de COINS, Ottawa, Canadá, Septiembre 29 — Octubre 10, 1952,* IASI doc. 1228b, julio 31, 1952, 9 p. (Int-IASI-*3020*)

Preparado por el Servicio de Economía y Mercados del Departamento de Pesca del Canadá, en colaboración con IASI.

Publicado también en inglés. Aparece en *Estadística,* marzo 1953, en ambos idiomas.

"Problems of International Comparability in Agricultural Statistics." *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1228a, July 31, 1952, 8 p. (Int-IASI-*3020*)

Prepared by the Markets and Economics Service of the Department of Fisheries of Canada in collaboration with IASI.

Published also in Spanish. Appears in *Estadística,* March 1953, in both languages.

INTERNATIONAL ACTIVITIES RELATING TO AGRICULTURAL STATISTICS

ACTIVIDADES INTERNACIONALES REFERENTES A LAS ESTADISTICAS AGROPECUARIAS

Aplicación de los Métodos de Muestreo en la Elaboración de Censos. Por Harold Nisselson. Bogotá, 1950. Contraloría General de la República. Censos Nacionales. Dirección Técnica. 102 p. (NonG-*3150*)

Traducción de conferencias dictadas por Nisselson en el Centro Latinoamericano de Capacitación Estadística y Censal, México, D.F., noviembre de 1948.

Application of Sampling Methods in the Taking of Censuses. A series of lectures given by Harold Nisselson at the Latin American Training Center for Statistics and Censuses. Mexico, D.F., 1948. 88 p. Mimeographed. (NonG-*3150*)

"The basic purpose of the lectures was to discuss some recent applications of sampling methods to problems that arise in taking censuses, particularly in the field of agriculture ..." (Source: Foreword.)

"Bases for Recommending Minimum Data Lists as an Aid to Filling Statistical Gaps: Illustrations of Data Lists from Recent Documentation." *II Inter American Statistical Congress, Bogota, Colombia, January 16-27, 1950,* IASI doc. 658a, November 15, 1949, 8 p. (Int-IASI-*3020*)

Published also in Spanish.

Includes a section on agricultural statistics.

"Bases para la Recomendación de Listas de Datos Mínimos como una Ayuda para Cubrir las Lagunas de Datos Estadísticos: Ilustraciones de Listas de Datos Tomadas de Documentación Reciente." *II Congreso Interamericano de Estadística, Bogotá, Colombia, Enero 16-27, 1950,* IASI doc. 658b, enero 8, 1950, 8 p. (Int-IASI-*3020*)

Publicado también en inglés.

Incluye una sección sobre estadística agrícola.

"Bibliography of Statistical Textbooks and Other Teaching Material." "Bibliografía de Tratados y Demás Material de Enseñanza Estadística." *Estadística,* vol. X, no. 36, September 1952, supplement 2, p. 623-669. (Int-IASI-*3040*)

See especially chapter 7: "Statistical Method with Special Application to Biology, Agronomy, and Forestry."

Clasificación Industrial Internacional Uniforme de Todas las Actividades Económicas. Lake Success, New York, 1949. Naciones Unidas. Oficina de Estadística. 34 p. Informes estadísticos, serie M, no. 4. (Int-UN-*3220*)

Publicado también en inglés.

Clasificación Ocupacional para el Censo de las Américas de 1950. Edición definitiva, 1951. Washington, D.C., 1951. Instituto Interamericano de Estadística. Comisión del Censo de las Américas de 1950. IASI doc. 979b. 65 p. (Int-IASI-*3240*)

Publicado también en inglés.

Clasificación Uniforme para el Comercio Internacional. Segunda edición. Nueva York, 1951. Naciones Unidas. Departamento de Asuntos Económicos. Oficina de Estadística. 146 p. Informes estadísticos, serie M, no. 10. (Int-UN-*3210*)

Publicado también en inglés y en francés.

Conclusiones y Recomendaciones de la Reunión de Bogotá de Julio de 1949, sobre el Censo Agropecuario de 1950 en las Américas. Washington, D.C. 1949. Organización de las Naciones Unidas para la Agricultura y la Alimentación. Oficina de Estadística. 16 p. Mimeografiado. (Int-FAO-*2110*)

Usado como documento para el II IASC.

"Cuadros Estándares Mínimos Propuestos para el Censo Agropecuário bajo el Programa del Censo de las Américas de 1950." *IV Sesión de le Comisión del Censo de las Américas de 1950, Wáshington, D.C., Junio 11-15, 1951,* IASI doc. 984b, mayo 10, 1951, 12 p. (Int-IASI-*3020*)

Publicado también en inglés.

Curso Especial de Estadística Agrícola. Dictado por C. Kyle Randall y William F. Callander. Quito, Ecuador, 1952. II Centro Latinoamericano de Capacitación y Demostración Estadística Agrícola. 100 p. (aprox.). (Int-*6200*)

Interpretación en clase y versión española por Miguel Valencia.

Este tomo comprende un texto abreviado del curso original en inglés.

Curso Especial de Estadística Agrícola. Por John B. Rutherford. Edición preliminar. San José, Costa Rica, 1951. Centro Latinoamericano de Capacitación Estadística Agrícola. 125 p. (aprox.). (Int-*6200*)

Este volumen contiene el texto original del curso en inglés, y su traducción al español por Jeanne de Posada.

Curso Especial de Muestra. Dictado por P.C. Tang. Quito, Ecuador, 1952. II Centro Latioamericano de Capacitación y Demostración Estadística Agrícola. 160 p. (aprox.) (Int-*3150*)

Interpretación en clase y versión española por Miguel A. Valencia.

Este tomo comprende los capítulos I a IX del curso original en inglés.

Véase también el curso dictado por Tang en el I Centro, San José, Costa Rica, 1951.

Curso Especial de Muestra Estadística. Por P.C. Tang. Edición preliminar. San José, Costa Rica, 1951. Centro Latinoamericano de Capacitación Estadística Agrícola. 300 p. (aprox.) (Int-*3150*)

Este volumen contiene el texto original del curso en inglés, y su traducción al español por Alberto Arbelaez Manrique.

Véase también el curso dictado por Tang en el II Centro, Quito, Ecuador, 1952.

Curso Especial de Pronósticos y Estimaciones Agrícolas. Dictado por Roy L. Gillett. Quito, Ecuador, 1952. II Centro Latinoamericano de Capacitación y Demostración Estadística Agrícola. 126 p. (Int-*6200*)

Interpretación en clase y versión española por Miguel A. Valencia.

Este tomo comprende el texto abreviado del curso original en inglés.

Véase también el curso dictado por Gillett en el I Centro, San José, Costa Rica, 1951.

Curso Especial de Pronósticos y Estimaciones Agrícolas. Por Roy L. Gillett. Edición preliminar. San José, Costa Rica, 1951. Centro Latinoamericano de Capacitación Estadística Agrícola. 150 p. (aprox.). (Int-*6200*)

Este volumen contiene el texto original del curso en inglés, y su traducción al español por Jeanne de Posada.

Véase también el curso dictado por Gillett en el II Centro, Quito, Ecuador, 1952.

"Data Gaps—Aids in Bridging." *II Inter American Statistical Congress, Bogota, Colombia, January 16-27, 1950,* IASI doc. 572a, October 31, 1949, 4 p. (Int-IASI-*3020*)
Published also in Spanish.
Includes agricultural statistics.

"Elements of an Effective Inter-American Training Program in Agricultural Statistics." By Gertrude M. Cox. *Estadística,* vol. XI, no. 38, March 1953. (Int-IASI-*3040*)

Especial Course in Agricultural Statistics. As lectured by C. Kyle Randall and William F. Callander. Quito, Ecuador, 1952. II Centro Latinoamericano de Capacitación y Demostración Estadística Agrícola. 130 p. (approx.). (Int-*6200*)
Interpreted by Miguel A. Valencia.
A shortened text is published also in Spanish.

Especial Course in Crop and Livestock Estimating and Reporting. As lectured by Roy L. Gillett. Quito, Ecuador, 1952. II Centro Latinoamericano de Capacitación y Demostración Estadística Agrícola. 156 p. (Int-*6200*)
Interpreted by Miguel A. Valencia.
A shortened text is published also in Spanish.
See also course given by Gillett in the I Center, San José, Costa Rica, 1951.

"FAO's Activities Relating to the Improvement of Agricultural Statistics: A Progress Report for 1952." *II Session of COINS, Ottawa, Canada, September 29 — October 10, 1952,* IASI doc. 1322 Eng., October 6, 1952, 6 p. (Int-IASI-*3020*)

Informe General de la Reunión de Delegados que Estudió el Plan de Censo Agropecuario para América, Bogotá, Julio 4-14 de 1949. Bogotá, 1949. Colombia, Contraloría General de la República, Dirección Nacional de los Censos; y Organización de las Naciones Unidas para la Agricultura y la Alimentación. 115 p. (Int-FAO-*2110*)
Usado como IASI doc. para la II IASC.

Informe sobre el Estado de Progreso de los Trabajos sobre Estadísticas Agrícolas Contínuas en Costa Rica, 1951. Por Comité Técnico del Proyecto de Establecimiento de un Servicio de Estadísticas Agrícolas Contínuas. San José, 1951. 24 p. (CR-*6200*)
Reproducido también por IASI, con apéndices, como doc. 1203 Sp.

"Informe sobre Estadística Agrícola Presentado por la Delegación de Costa Rica a la Segunda Conferencia de COINS que se Llevará a Cabo el 29 de Setiembre al 10 de Octubre de 1952, en Ottawa, Canadá." *II Sesión de COINS, Ottawa, Canadá, Septiembre 29 — Octubre 10, 1952,* IASI doc. 1217 Sp., 95 p. (Int-IASI-*3020*)
Publicado también bajo el título *Tres Trabajos Básicos para la Estructuración de las Estadísticas Agrícolas Continuas en Costa Rica, Desarrollados en 1951.*

Informe sobre Estado de Progreso de los Trabajos de la Tabulación Avanzada por Muestreo del Censo Agropecuario de Costa Rica de 1950. Proyecto cooperativo de trabajo entre el Servicio de Estadística y Economía Agrícola de la Dirección General de Estadística y Censos de Costa Rica, el Instituto Interamericano de Estadística, y el Instituto Interamericano de Ciencias Agrícolas. San José, 1951, Comité Técnico. 29 p. y mapa. (CR-*2110*)

International Standard Industrial Classification of All Economic Activities. Lake Success, New York, 1949. United Nations. Statistical Office. 31 p. Sttistical papers, series M, no. 4. (Int-UN-*3220*)
Published also in Spanish.

"Lagunas de Información Estadística—Ayudas a Cubrirlas." *II Congreso Interamericano de Estadística, Bogotá, Colombia, Enero 16-27, 1950,* IASI doc. 572b, octubre 31, 1949, 4 p. (Int-IASI-*3020*)
Publicado también en inglés.
Incluye estadísticas agropecuarias.

"Mathematical Training of Undergraduates in Agricultural Economics." Report of the Boulder Symposium. By R.L. Anderson. *Econometrica* vol. 18, 1950, p. 204-205. Unexamined. (Int-*3040*)

Memoria del Centro [Latinoamericano de Capacitación Estadística Agrícola]. Edición preliminar. San José, Costa Rica, 1951. 62 p. (Int-*6200*)

Memoria [del Laboratorio de Tabulación Censal]. Rio de Janeiro, 1951. 60 p. (Int-*2110*)
La Memoria describe la organización del Laboratorio y su objetivo de facilitar la solución de los problemas relacionados con la tabulación de los resultados de las operaciones censales, particularmente del censo agrícola.

"Methods in Statistical Training under Several Types of United States Programs of Technical Cooperation." By Frank S. Morrison. *Estadística,* vol. X, no. 36, September 1952, p. 463-470. (Int-IASI-*3040*)

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